GAS

ENGINEERING • UTILIZATION • LOAD-BUILDING • MANAGEMENT

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One year ago we told her about "Measured Heat"

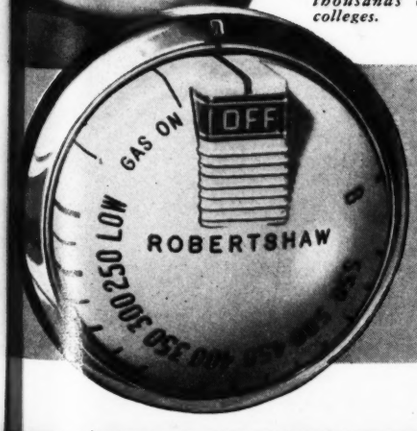
THE EFFECT OF CORRECT AND INCORRECT HEAT ON MEAT AND POULTRY ROASTING
STS WERE EXACT ALIKE IN WEIGHT AND MEASUREMENT BEFORE ROASTING
Poultry roasted at optimum temperature has smooth, glossy skin, uniform brown, with no shrinking, blistering or pulling away from bone.
Poultry roasted at too high a temperature has dry, blistered, and cracked skin, too brown in color, and meat has pulled away from bone on drumsticks under wings.
HERMOSTAT COMPANY, YOUNGWOOD, PA.
AW OVEN-HEAT CONTROLS
Measured Heat
N IMPORTANT INGREDIENT IN EVERY RECIPE

The Robertshaw book "Measured Heat" has become a competent cooking manual in thousands of schools and colleges.

When it comes to conservation of food and fuel and the protection of vitamin content demanded by the war—this country is fortunate. More than a year ago—long before Pearl Harbor—thousands of teachers, home demonstration agents and home economists were already at work teaching the gospel of nutrition.

So today when America looks to her kitchens, hundreds of thousands of students and homemakers are well on their way to better cooking methods—helped by the Robertshaw "measured heat" program and by Robertshaw-equipped ranges.

Robertshaw is indeed proud to make this contribution to the nation's health, its conservation of food and fuel, and the winning of the war.



ROBERTSHAW HEAT CONTROLS

ROBERTSHAW THERMOSTAT COMPANY, YOUNGWOOD, PA.

WHEN TOOLS OF PEACE ENLIST FOR WAR

Measuring and Controlling Gas Consumed in War Industry Plant with EMCO Meters and Regulators and Nordstrom Valves

ON industry's nation-wide battlefront gas has proven to be one of our most effective and efficient weapons. The shift from normal peacetime requirements to unprecedented heavy wartime demands finds the entire Gas Industry willing to shoulder the responsibilities thrust upon it.

To utilize gas to the best advantage and at the same time conserve this important fuel, it must be accurately controlled and measured. As a part of our contribution toward the production of military equipment, we are furnishing EMCO Meters and Regulators and Nordstrom Valves to help the Gas Industry meet the expanding needs of industry.

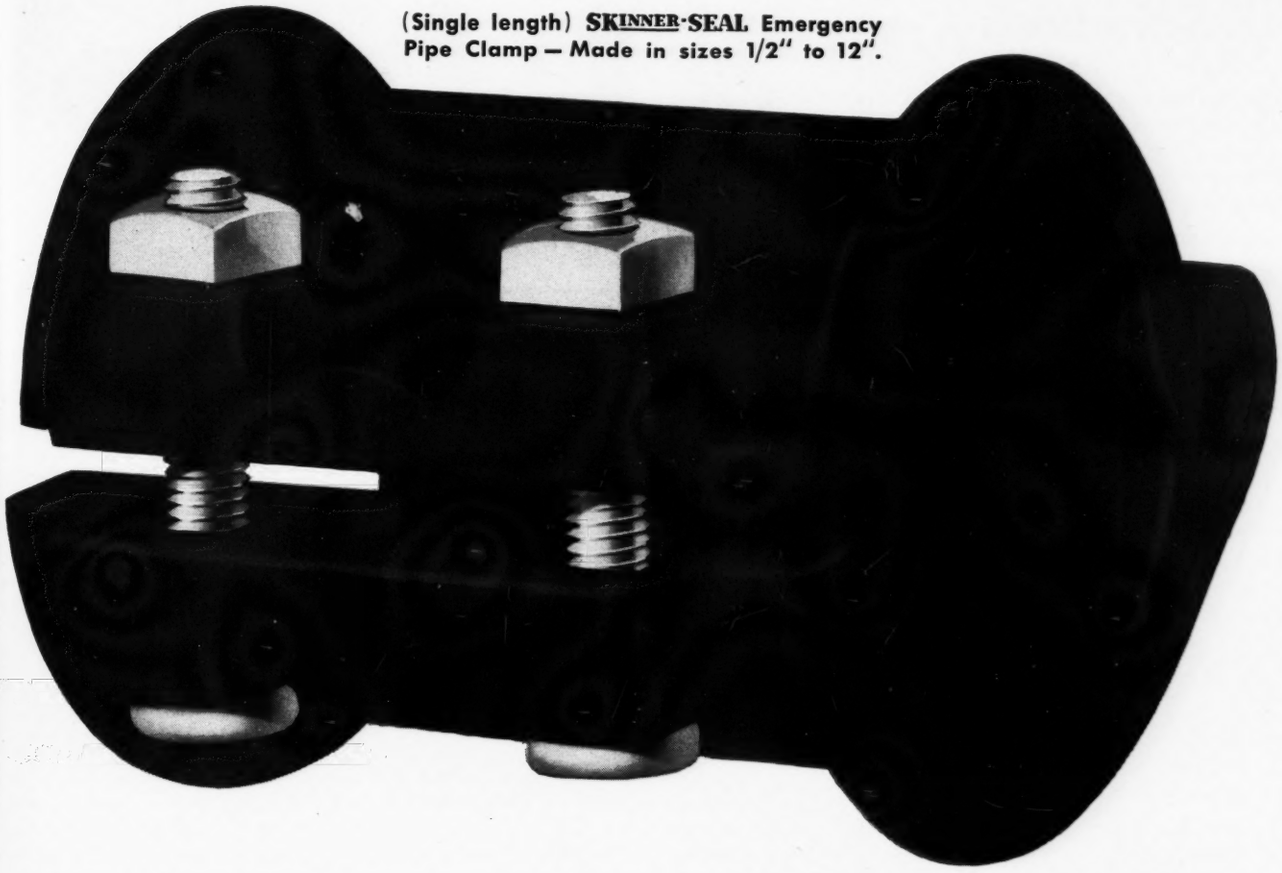
PITTSBURGH EQUITABLE METER COMPANY

NEW YORK · BROOKLYN · DES MOINES · MEMPHIS · OAKLAND · TULSA · CHICAGO · BOSTON

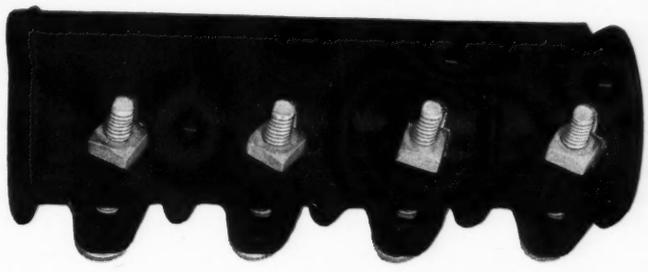
MERCO NORDSTROM VALVE COMPANY
Main Offices, Pittsburgh, Pa.
NATIONAL METER DIVISION, Brooklyn, N. Y.

KANSAS CITY · PHILADELPHIA · SAN FRANCISCO · LOS ANGELES · SEATTLE · HOUSTON · COLUMBIA · BUFFALO

(Single length) SKINNER-SEAL Emergency Pipe Clamp — Made in sizes 1/2" to 12".



SAVE PIPE — USE THESE ★ LASTING REPAIRS! ★



(Double length) SKINNER-SEAL Pipe Line Clamp — Made in sizes 3/4" to 7" O. D. inclusive.

★ During the present critical shortage of pipe, nothing compares with these clamps for repairing corrosion leaks and splits in services as well as mains — for all sizes of steel and cast iron pipe, 1/2" to 12". Made of malleable iron — of heavily reinforced design. Oversize high carbon-steel bolts. Hinged for simplicity of application. Furnished complete with pressure-equalizing gasket. Write for complete catalog.

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GAS

REG. U. S. PATENT OFFICE

Eighteenth Year of Publication

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GUEST EDITORIAL

The Washington Whirlpool

By GEORGE BEAN

American Gas Association, Washington, D. C.

SINCE the declaration of war against the Axis Powers, Washington, for two years previous about the busiest city in the country, became a mad house. Naturally, policies in force while we were interested primarily in helping the other fellow who was doing the fighting were abandoned or materially changed. New bureaus were set up almost overnight and thousands of workers were drafted from industry and brought to Washington for government work. They are still coming in from every part of the country. Hotel accommodations and housing facilities are at a premium.

The gas industry, through its national Association, offered its entire facilities, including personnel, to the Government. Today some of the best gas men in the country are now identified with various Government departments, all doing an excellent job.

Old methods of handling fuel contracts that had existed for years were changed. The Quartermaster General's office that had handled all such matters for many years was superseded by the United States Engineers, necessitating a tremendous amount of work in readjusting our contacts.

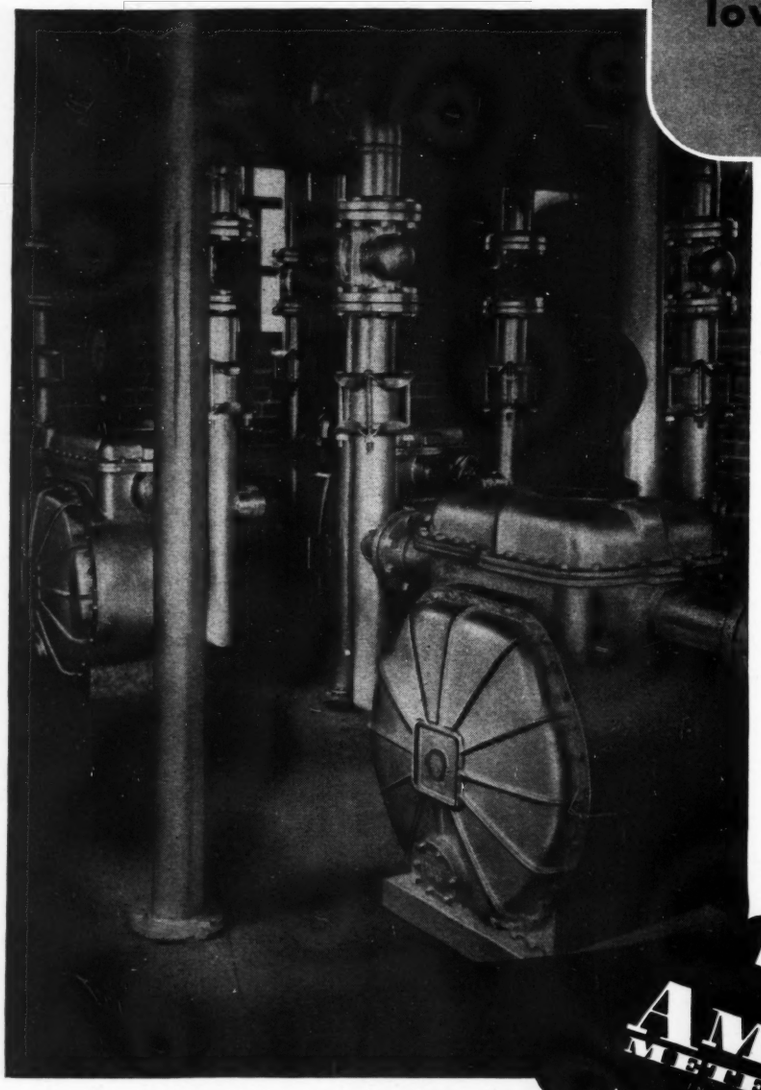
Defense housing divisions, both governmental and privately financed, sprung up very fast until there are now 16 different activities having something to do with defense housing, although as I write this the President is coordinating all housing activities under one head. If this works out successfully, it will be a great help to all the industries in the United States which heretofore have spent days and frequently weeks trying to find out who the man was they should see regarding some particular defense housing project. Sometimes a few hours mean the difference between obtaining or losing a fuel contract. Therefore, specific data are important when referring to a defense housing project.

Everything in Washington having to do with the gas industry's relation with the war effort has some connection with priorities. After authority has been granted a producing company to drill a well, a preference rating must be applied for the necessary machinery and equipment for drilling the well. Then another priority must be applied to get the pipe to bring the gas into the main line. There are a few other priorities to be obtained before the gas finally reaches the consumer's burner.

The War Production Board under the direction of Donald M. Nelson is as efficient an organization as industry could wish to do business with. Heads of the divisions are all fine men and have shown a splendid spirit of cooperation. Our industry is indebted to these men for the expeditious way in which they handle the tasks at hand.

Once again

IRONCASE meters chosen for accuracy and low performance cost!



● Showing three of the four master meters (Metric-American 500-B Ironcase models—equipped with Metric Volume and Pressure Gages) inside meter house of a prominent low cost housing project.

● **Long-life meter accuracy and stamina, are carefully considered economy factors in this installation at a newly completed FHA low cost housing project in a large Southern city. In peace and wartime economy, the space saving, rustproof METRIC-AMERICAN Ironcase contributes to low cost gas service for thousands of industrial and other large-volume users of gas.**

. . . Outstanding performance made possible by Ironcase features such as one-piece body casting, rigidly fastened full bellows diaphragms, large capacity valves (non-pulsating, minimum friction type), gas-tight stuffing boxes, full provision for bearing lubrication and for condensate drainage.

A-1820

AMERICAN METER COMPANY
INCORPORATED ESTABLISHED 1836
METRIC METAL WORKS • ERIE, PA

THERMALLY THINKING

When Bombs Fall

THERE is evidence in some sections of the country, where susceptibility to panic may be a little more generously developed than is the average, that public misapprehension exists on the inherent danger of being in the neighborhood of a gas holder during an air raid. The layman's concern with the probable effect of a bombing near a water-sealed gas holder revolves almost universally around the one thing that is most unlikely to occur—an explosion of the gas stored therein. The reasoning runs like this: "If a comparatively small bomb can level half a block, just imagine what would happen to our house (or me) if that thing ever cut loose!" "That thing," of course, being a five or ten million foot holder.

Gas men know that the danger of a holder explosion as the direct result of even a direct hit by an incendiary bomb is so remote as to be negligible. Literally hundreds of such hits have been scored in England, and in not a single instance has the holder exploded. It is true that fires have been started by incendiary bombs, but if incendiary bombs fall some fires are inevitable. And in the main, emergency crews within gas company ranks are already trained to cope with the additional fire hazard to gas plant and storage facilities that enemy air raids would entail.

But we do not believe that the gas companies have fully discharged their responsibility, even when they have seen to it that every possible precaution against disaster has been taken through the training of their own personnel. We believe that it is the further obligation of every gas company to disabuse the public mind of any unnecessary fears regarding the danger of gas holder, or gas plant, or gas distribution equipment constituting an additional hazard to life or property in their vicinity.

It is well also to take into consideration that the fighting of gas fires is a specialized operation, requiring a knowledge of the characteristics of gas itself and familiarity with the best methods of handling it under emergency conditions. Municipal mayors, fire chiefs, police commissioners and officers and members of local defense councils, should speedily be educated in the procedures involved in fighting gas fires. While it is true that the greatest guarantee of safety resides in the skill and the resourcefulness of the emergency crews of the gas utilities, it is important that their efforts be not handicapped or their work undone by the well-meaning interference of political authorities, or even of professional fire fighters. Axiom number one with a fireman is to put out the flame, yet where escaping gas is burning this might conceivably be the most dangerous thing that could be done.

It must be borne in mind that the entire country is literally swarming with various civilian defense volunteers and officials. Their authority and their duties have as yet been neither adequately defined nor delimited. Every one is ready and anxious to serve, yet each has his own idea of how his own particular function or service should best be handled. We are frankly apprehensive of the results should an arm-banded auxiliary fireman undertake to give either orders or suggestions on the handling of a gas fire.

Such interference with orderly and effective emergency practice is inevitable unless the gas companies themselves take steps in advance to circumvent it. To this end we recommend that all of the operating gas companies call in any interested city officials for an inspection of the gas properties, and for a discussion and explanation of procedure to be followed in the event of enemy action. Local Defense Council officials, auxiliary police and firemen should be invited to participate in such educational discussions, and so far as possible, those whose posts will be in the immediate vicinity of gas plants or of gas holders should be given additional specific instructions as to the possible effect of air raids on gas properties, and the most effective means of meeting the emergencies that may arise.

A new book just off the press, "War Protection of the Gas Industry," compiled by George Segeler for the American Gas Association, provides for the most comprehensive compilations of all available information on the protection of both property and personnel, and the repair of damage caused by air raids and other attacks. It is to be expected that the entire gas industry will study its recommendations and from them work out the procedures best suited to every local situation. But the obligation to educate the people of each community in both the safety and the hazards of gas operations during enemy action rests on the shoulders of policy-making executives of every gas utility in the nation.

■ ■

Advertising and Morale

HAVING on more than one occasion enlivened these columns with our criticism of the Alice in Wonderland copy slant of much of the gas industry advertising, we are now pleased to report that the National Advertising Committee of the A. G. A. has swung around to a realistic and a timely recognition of the fact that a state of war exists between the United States and an assorted gang of international cutthroats known generally as the Axis.

New copy is being whipped through the mill, and while everything is still being done under the cloak of momentous silence that characterizes the preparation of any new advertising, we have reason to believe that the new campaign, when it breaks, will have abandoned the Come out of the Kitchen Mary, Darling appeal, and will get down to brass tacks and talk health, nutrition, conservation of food and fuel, and above all the contribution to national welfare that the homemaker can make right in her own home and in her own kitchen.

As Chairman Strickler has pointed out: "Eighty-five million Americans eat gas-cooked meals. This makes the gas industry perhaps the greatest single common denominator in the whole field of nutrition."

The importance of the job that lies ahead for those who dictate the advertising policies of the utilities and of the American Gas Association cannot be too strongly stressed. To a large extent there will fall on their shoulders the responsibility of deciding not only the manner of presenting the industry's message—but the formulating of the industry's attitude upon which that message will be based. If that attitude is one of simple honesty and understanding of the consumers' problems, if it is divorced from any selfish desire to make capital of a national crisis, we believe that gas advertising will be fulfilling a vital function in maintaining the morale of democracy.

GAS at WAR

Washington Notes

EXPANDING war production has resulted in further restrictions and cessations in the manufacture of normal consumer and industrial goods. As materials earmarked for civilian use become scarce, more and more lines are being discontinued altogether. A brief summary of the important orders affecting the gas and allied industries follows:

Division of Industry Operations, WPB: Reorganization of the Bureau of Industry Branches was completed early in March by Philip D. Reed, Bureau Chief. Several of the branches have been divided, the total number now being 24.

Heading the air conditioning and commercial refrigeration branch is J. M. Ferrand, general manager, Baker Ice Machine Co., Omaha, Neb.

Heading the plumbing and heating branch is W. W. Timmis, president, Au-Temp-Co Corp., New York, N. Y.

WBP Audits: Authority of War Production Board agents to have access to the premises and records of a company affected by priority orders was upheld March 6 when Federal Judge John P. Barnes in Chicago issued a permanent injunction requiring the Chicago Alloy Products Co. to permit audit and inspection by government agents and to refrain from disposing of its stocks of metals until the audit had been made. This is the first action of its kind to be taken by the government.

Price Ceilings: New domestic heating and cooking stoves and ranges and new mechanical refrigerators were among the eight "scarcity" articles (others: typewriters, vacuum cleaners, washing machines, ironers, radios, phonographs) upon which the Office of Price Administration on March 23 put price ceilings to check inflationary movements.

The price on domestic cooking stoves and ranges was a 60-day temporary order pegging prices at the level of March 19. A permanent price level was fixed on household mechanical refrigerators, with the ceiling set at the manufacturers' recommended retail price list.

The step was OPA's greatest incursion into the field of retail price control, the orders setting maximum prices on wholesale marketing, and in two ininstances—vacuum cleaners and typewriters—putting lids on manufacturers' prices.

Cooking Appliances: Iron and steel allotments for gas, coal, wood, electric, kerosene and other types of ranges have been cut 35% below the monthly average for 1941. Bright work and "cover tops" are banned, with copper fittings severely restricted.

Domestic Mechanical Refrigerators: Production will stop May 1. January restrictions were lifted for the February-April period to permit the building up of reserve stocks. A price ceiling has been imposed and a request issued by Price Administrator Henderson that prices be restored to February 2 levels. Effective February 14, retail stocks were frozen, except that each store or chain was permitted to sell 100 refrigerators, or 1/12 of the 1941 sales, whichever is greater.

Low Pressure Boilers: Elimination of metal jackets, fusible plugs and tricocks from low pressure boilers was ordered after June 1 by the WPB on March 7 in Schedule III to Limitation Order L-42. Permission is given to dealers, however, to deliver boilers in stock June 1, even if equipped with jackets, plugs and cocks. Production of metal jackets is also ended March 16 by the order, although delivery is allowed on forms finished by that date, or on stock that has been processed so that it could not be used for other purposes.

Commercial Refrigerating Machines: Priority assistance for the maintenance of refrigerating equipment in stores and restaurants has been granted by Amendment No. 2 to Preference Rating Order P-100, issued March 9 by the director of industry operations.

Under the terms of Order P-100, a preference rating of A-10 is assigned to materials for repair and maintenance of equipment for specified industries and operations. The March 9 amendment includes the maintenance of refrigerating equipment in stores and restaurants.

Fuel Oil Consumption: The War Production Board's limitation order L-56 governing consumption of fuel oil prohibits, with certain essential exceptions, all further installation of oil-burning equipment by industry and home owners. Also, it authorizes action which will result in a substantial number of users of industrial fuel oil changing to the use of available substitute fuels, such as manufactured gas, coal, wood and sawdust, and requires the maximum utilization of standby facilities which operate on such substitute fuels.

The states in which the order is applicable are the following: Connecticut, Delaware, Florida, Georgia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia and West Virginia, Oregon, Washington, and the District of Columbia.

Trucks Rationed: Rationing of all types of new trucks, truck tractors and trailers, to be administered through the joint facilities of the War Production Board and the Office of Defense Transportation, became effective March 9. The plan is embodied in General Conservation Order M-100.

Rationing will enable dealers to release gradually to government and essential civilian users stocks of trucks, truck tractors and trailers which have been "frozen" since the beginning of the war. It is estimated that approximately 100,000 of these vehicles will be available for rationing during the balance of this year.

Civilians desiring to purchase a commercial vehicle must apply to a local allocation office of the Office of Defense Transportation on form PD-310. Forms may be obtained at any sales agency handling the make of vehicle desired.

A local allocation officer will consider the application; if it is approved, it will be sent to the Washington office of ODT for review. If approved there, it will be transmitted by the applicant to the WPB for issuance of a "certificate of transfer," which may be presented by the applicant to a sales agency or other person from whom he wants to obtain the desired vehicle. This certificate is known as PD-321.

Under Conservation Order M-100, "usage classifications" set up March 1 act as a guide for preference in making deliveries of vehicles.

Limitation Order L-31

Administrative Letter No. 4: On March 17 J. S. Knowlson, director of industry operations, War Production Board, issued Administrative Letter No. 4, which contains instructions to all utilities in areas specified in Exhibit "A" of Limitation Order L-31 as amended. This letter modifies Letter No. 2 in which the director of industry operations approved in advance new or increased deliveries of gas to non-residential consumers, provided such deliveries did not average more than 10,000 cu. ft. per day and were not used for space heating. This advance approval has been modified to read:

> "Pursuant to paragraph (d) (3) of the order, the Director of Industry Operations herewith approves in advance all deliveries of natural or mixed natural and manufactured gas to new non-residential consumers in the areas specified in Exhibit A annexed to the order, and increased deliveries of gas to existing non-residential consumers in such areas for the operation of new gas equipment, provided that such new or increased deliveries do not exceed 10,000 cu. ft. during any single day, and that no part of such new or increased deliveries shall be used for the operation of space heating equipment."

The letter further advises that each utility must submit a report of investigations for approval by the director of industry operations before making deliveries of gas to a new or existing non-residential consumer who seeks exemption from L-31 on the grounds that he cannot reasonably use any fuel other than gas because of technical utilization factors or process requirements.

The letter also explains that utilities must be prepared from time to time to furnish information to the director of industry operations showing in M c. f. per day the amount by which their systems' peak demands have been increased through the addition of load since March 1, 1942. The demand must be broken down into residential and non-residential categories.

Attached to the letter is a long list of questions and answers which have been issued to clarify the administration of L-31. All utilities are authorized to use this question-and-answer information in dealing with consumers.

■ ■

Priorities

Preference Rating P-46 Revised: The War Production Board issued March 26 a complete revision of Preference Rating Order P-46 which was issued last September to assist utilities in obtaining the minimum amount of materials necessary for maintenance, repair and operation. Such materials were assigned a blanket rating of A-10.

The new order supersedes the original order and all amendments thereto and makes several important changes, the principal of which are:

1. The blanket rating of A-10 in the original order is replaced by two higher ratings. An A-2 rating is granted to deliveries of material for maintenance, repair and operating supplies for power plants and pumping plants. An A-5 rating is granted for all other facilities, such as lines, pipes and substations. One of the reasons for the distinction is that if a power plant or a pumping station breaks down, the whole system is put out of business. If a power line or a water pipe breaks, only a part of the system is affected. In either case, the rating is high enough to make possible prompt repair.

2. The order also assigns a rating of A-5 to deliveries of materials to bring electricity, gas, or water to war plants or other projects bearing a rating of A-5 or better. This does not apply to housing projects. An A-5 rating is also granted to deliveries of materials needed to protect power or water plants against sabotage, such as fencing, tear gas bombs for guards around such plants, etc. These ratings may not be applied without prior authorization from the director of industry operations of the War Production Board.

3. Line extensions to serve a new consumer are restricted to 250 ft. The original order permitted a 1000-ft. extension. Extensions begun prior to March 26, the date of issuance of this order, may be completed.

Two other changes in the order give utilities greater flexibility in obtaining delivery of materials:

1. Under the previous order, restrictions were placed on the acceptance of deliveries of material in any quarterly calendar period. Often, through no fault of the utility, such materials were not delivered on the dates for which they were ordered. This provision has been changed to place the restriction not on the period in which materials are delivered, but on the period in which they are scheduled for delivery.

2. Previously a utility could not obtain certain items which it needed if the dollar value of the items on hand within the same class exceeded a practical working inventory. This has been changed to permit a limited amount of deliveries of needed items.

■ ■

A WARTIME MESSAGE

to the 2,000,000 owners of

Servel Gas Refrigerators

ON APRIL 30TH, the last refrigerator for normal civilian use will have rolled off the lines at Servel—and at every other refrigerator plant in America.

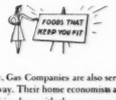
From that day—and until victory is won—every resource and facility of this industry not already devoted to war production will be geared to all-out manufacture of these vital materials.

Because automatic refrigerators have come to play such an important part in the lives of most families, it is natural that this change-over may raise some questions in people's minds. "Will my present one last?" "Suppose it doesn't?" "Can I still get service?"

You, as a Servel owner, are familiar with the qualities of the Gas Refrigerator. You remember your reasons for buying it. You can be assured, therefore, of this:

Your refrigerator is *not* likely to need repairs. There are no moving parts in its freezing system. No moving parts means nothing to wear or cause noise. It means long life.

Besides, the order stopping the manufacture of refrigerators will not reduce or impair facilities for inspection and service. Servel will continue to cooperate with Gas Utilities, Distributors and Dealers in servicing Servel Refrigerators. You can feel confident that your refrigerator will *continue* to operate—will *continue* to provide you and your family with safe food protection and ice cubes.



Today, Gas Companies are also serving you *another* way. Their home economists are working hand-in-glove with the government on the National Nutrition Program. They'll show you how to feed your family better and more economically. Give you latest information on foods that keep you fit.

Looking beyond today, no one can say for sure what refrigerators are going to be like when peace returns. No one knows. But this *is* certain—that there *will* be refrigerators—that *we'll* be making them (and who knows what other modern appliances!)—and that they'll be *finer* than ever.

SERVEL, *Inc.*

Makers of the Refrigerator That "Stays Silent...Lasts Longer"

Meeting the order stopping the manufacture of gas refrigerators with intelligent patriotism, Servel, Inc., is inserting this advertisement in the March 23 issue of Life, and in the April 4 issues of Liberty and the Saturday Evening Post. Also giant reproductions of the advertisement are being sent to all their dealers with this significant statement: "The people who will read this message are YOUR customers. By prominently displaying this advertisement in your showroom window, you will tie in with this influential message, further helping to keep Gas Refrigeration in the forefront of the popular mind."

The Vitamin Front

BECAUSE bombs are noisy and spectacular, and sabotage is secretive and sinister, those measures adopted by gas utility companies to combat the threat of violent enemy action have been in the forefront of industry news. Meanwhile, with little publicity and no fuss, the home service departments have been making equally valuable contributions to the nation's war effort through a Food for Freedom campaign.

This campaign resulted from the discovery by the Army that, of the first one million selectees called in from this land of plenty, 40% suffered from nutritional deficiencies. Such a condition in the face of abundant food supplies underlined the necessity for intensive education of the average housewife on the value of nutritive diets. Accordingly, the government set up a daily yardstick of foods that should be eaten every day, and the Red Cross enlisted various agencies to carry out an actual training program.

In this work, none were able to respond more effectively than gas company home service departments. Experts in nutrition, experienced in giving cooking demonstrations, they were ready to go into action immediately. Briefly summarized, the activities of a few of the many home service departments are:

Lone Star Gas System, Dallas, Texas: To enlist the hidden vitamins in the war effort, the home economics department of this progressive system launched a series of Food for Freedom parades. The parades are streamlined demonstrations to show their customers what vitamins are needed and in what foods they can be found. First of these demonstrations was staged in Corsicana during February by Miss Alber-

Devised by the government to visualize the component parts of a well-rounded diet of balanced nutritional value, the daily foods yardstick is used in the food demonstrations to illustrate how dishes may be prepared to combine the various separate items needed by every family daily. Ribbons lead from each dish to the foods that were included in its making.

tine Berry, home service economist of the Lone Star Gas Co. Similar demonstrations have been given in other key cities of the system, notably in Fort Worth by Lucie Lee Carley, and in McKinney and Dallas.

In addition to these demonstrations, the various member companies are also conducting training courses which supply 20 hours of special cooking instruction over a five weeks period. Supplementary direct mail pieces go out weekly under the title, "Modern Homemaking." Twenty-nine thousand copies of these bulletins have been distributed. Each week's bulletin deals with the vitamin content of a single basic food item, together with suggested recipes and ways of including it in the average family diet. Sixty thousand copies of a 24-page booklet, "Vim, Vigor, and Vitamins," have also been placed in the hands of Texas housewives.

Mississippi Power & Light Co., Jackson, Miss.: Declaring without qualification, "Every plan—every policy of the company becomes secondary to the number one job of all Americans—winning the war," this company has organized its residential sales force and its home service department into a Victory Clinic for the Home. An essential feature of the work of the clinic is a weekly 30-minute radio broadcast discussing methods by which the housewife can conserve time, food, clothing and other household essentials, protect the family health, stretch the family budget, and make the most economical use of gas. A $25 defense bond is awarded each week.

The aggravating question of what to advertise when the nation is at war has been admirably solved by many gas associations, companies, and appliance manufacturers. Instead of the normal peacetime selling copy, all of their advertising has been revised to hammer home the story that vitamins are valuable in the Fight for Freedom.

American Gas Association: A mat and photograph service for local gas companies to use in their community advertisements has been announced. The mats are one column complete ads which stress the methods of cooking all types of food to preserve vitamin content and nutritional value. The photographs are of favorite American dishes which can be used to illustrate locally prepared advertisements stressing the necessity of eating well to work . . . and fight . . . well.

Pacific Coast Gas Association: Consumer advertisements placed in such sectional home magazines as *Sunset, Parent-Teacher Courier* and *California Federation News* are being revised to stress the value of vitamin and nutritional cooking. No direct selling will be attempted, but stress will be placed on the economy and long-time serviceability of gas ranges.

Pittsburgh Natural Gas Companies: The natural gas company group serving the greater Pittsburgh area, including Carnegie Natural Gas Co., Equitable Gas Co., Manufacturers Light & Heat Co., and Peoples Natural Gas Co., will slant all their publicity on cooking the healthful way, through simmer cooking, to preserve vitamins, and the economical way, through roasting to tenderize less choice cuts of meat.

American Stove Co.: In the February issue of the *Magic Chef Magazine*, house organ prepared for dealers, was a 32-page booklet containing instructions on how to choose and cook the proper foods for good health. Listed as Magic Chef's No. 1 contribution to the National Nutrition Campaign, this booklet will be followed by other promotion pieces aimed to further the national campaign against malnutrition.

Geo. D. Roper Corp.: A new advertising character has been introduced in Vinnie Vita-man, who is used to visualize the vitamin saving that results from the proper cooking of the ordinary foods found on every table. In one cartoon sketch worked into the regular ad layout, Vinnie Vita-man is shown curling up in a pot placed over a high, hot flame in contrast to his pleased well-being while standing on a slow, simmer burner. Other right and wrong practices are similarly dramatized with balloon captions carrying the copy message.

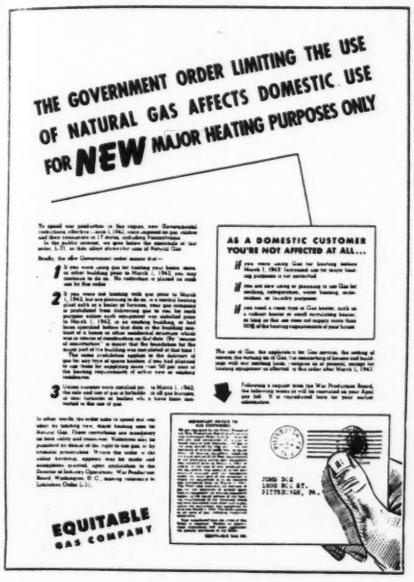
■ ■

Advertising Today

A.G.A. War Advertising Service: One of the most ticklish public relations problems gas utility companies are currently facing is that of how and what to advertise in local newspapers. To form a common pool of the best efforts of the entire industry along this line, the A. G. A. has inaugurated a special advertising bulletin which reproduces the ads run by the member companies in their community papers.

The current issue stresses the various ways in which individual companies are explaining the meaning of Limitation Order L-31 to their consumers, but advertisements covering all phases of the war-time fuel conservation problem are presented and will be emphasized in future copies of this series. This advertising tip sheet may be obtained by writing direct to the Natural Gas Department of the American Gas Association, 420 Lexington Ave., New York.

Another valuable service of the Association is the publication of pre-prints


THE GOVERNMENT ORDER LIMITING THE USE OF NATURAL GAS AFFECTS DOMESTIC USE FOR NEW MAJOR HEATING PURPOSES ONLY
AS A DOMESTIC CUSTOMER YOU'RE NOT AFFECTED AT ALL...
EQUITABLE GAS COMPANY

of Association ads that are to appear in future numbers of trade publications. The ads currently feature the war activities of gas in industrial plants and army camps but continue to pound home the underlying thought that "The Trend Is to Gas."

L-31 and The Equitable Gas Co.: Publication by the government of order L-31 started a rush of phone calls to the company from alarmed customers who visioned a complete shutting off of all gas service. To allay his fear and to clarify the misconceptions that had formed in the public's mind, The Equitable Gas Co., Pittsburgh, Pa., quickly prepared and published a five-column 13½-in. advertisement explaining to domestic users that the order affected only *new* major heating installations, and did not apply to the use of gas for cooking, water heating, refrigerating, or clothes drying. (See cut.)

■ ■

Gas and Magnesium

OF SIX American companies which recently contracted to supply 157,000,000 lbs. of magnesium annually, five will use gas as a power source instead of electricity. Plants using gas can be readied for active production more rapidly than those using the electrolytic process, and the higher cost of operation is mitigated by the lower cost of construction.

Being built in Louisiana under a contract with the Defense Plants Corp., the new $22,500,000 plant of the Mathieson Alkali Works, Inc., New York City, will produce about 36,000,000 lbs. of magnesium yearly through a new process that uses gas to calcine dolomite which is obtained from nearby quarries. This material resembles limestone and consists of calcium-magnesium carbonate. After calcination, the resulting oxides of calcium and magnesium are variously processed to produce metallic magnesium and chlorine, both of which are essential war items.

The importance of magnesium in the war effort was emphasized again by the announcement that planned production has been stepped up another 325,000,000 lbs., an increase of 81% above the former estimate of 400,000,000 lbs.

Plants already completed are producing about 54,000,000 lbs. of the expected total. Contracts have been let for construction of a large part of the additional 325,000,000 lbs. just authorized.

■ ■

Gas Helps in St. Louis

ONE of the heaviest loads in the experience of the Laclede Gas Light Co., St. Louis, Mo., has been developed by government construction of a gigantic small arms and ordnance plant in Missouri. Several buildings will be used to produce the ammunition needed by the Army and Navy, representing over $100,000,000 for building. Personnel, when the plant is completed in 1942, will number more than 25,000 workers.

Natural gas is to be used exclusively, for batteries of annealing furnaces in the ten production buildings of the plant, incinerators, tool and die heating, emergency boiler heat, and many other uses. The plant at present is consuming approximately 250,000 cu. ft. of gas per hour, a figure augmented by 400,000 cu. ft. when the B. & W. emergency burners are operating. Approximate gas consumption daily will be 6,000,000 ft. when production lines are in full swing, according to W. B. Thompson, industrial gas engineer of the Laclede company.

Gas equipment for installation in the various buildings has been supplied by Salem Engineering Co., American Gas Furnace Co., Surface Combustion Co., Southern Equipment Co., and Crane Co. Gas is being used chiefly for annealing on the cartridge lines, heat-treating of empty cartridges which are fabricated in one building, filled with powder and fitted with bullets in another. Gas heat insures constant sizing of the cartridges as they pass along filling lines, and are finished and inspected. Gas also heats solder used to seal cartridges in terneplate containers in turn packed inside a heavy wooden box for shipping. An 8-in. gas line, from a convenient main located not far from the center of the plant, supplies the huge volume of natural gas demanded.

Merely providing food for the 25,000 workers who populate the plant 24 hours a day during the emergency is responsible for a heavy portion of the gas load, according to Mr. Thompson. A central cafeteria conveniently reached from any of the plant buildings is designed to feed 8500 employees simultaneously, and there are "steam table" cafeterias in each of the production buildings which are staffed with 1000 workers, and will serve lunch in three shifts, or 300 persons at a time.

"All out" in record time went Portland (Ore.) Gas & Coke Co.'s 720 employees during a recent defense bond campaign which featured group meetings such as this. Annual pledges through the payroll plan alone exceeded $50,000, with other plans accounting for another $15,000.

A 10-Year Salvage Program

WITH the coming of war to the United States, the salvage operations of public utilities are of increasing importance. Since 1932 the Cincinnati (Ohio) Gas and Electric Co.'s salvage operations have resulted in annual savings exceeding $100,000. These operations are carried on by three groups under the general supervision of W. R. Freeman, purchasing agent and general storekeeper. Gas salvage work is performed at the company's Front and Rose Streets plant. Scrap metals are handled at the Hartwell plant.

Items of all types pass through salvage operations every 12 months. Tools are reconditioned to become as good as new. In one year the Gas Salvage Division reconditioned 1100 cold chisels, 2100 picks, 1240 danger signs, 9200 pipe nipples, 10,700 pipe fittings, 875 meter connections, 1300 bolts and 1360 lanterns. These are just a few of the many items that are made over in the company's gas salvage operations alone. The photographs shown below indicate in some specific detail the scope of Cincinnati Gas and Electric Co.'s salvage operations.

From the O-K News of The Cincinnati (Ohio) Gas & Electric Company. Photographs by Robert Lehker, O-K News staff photographer.

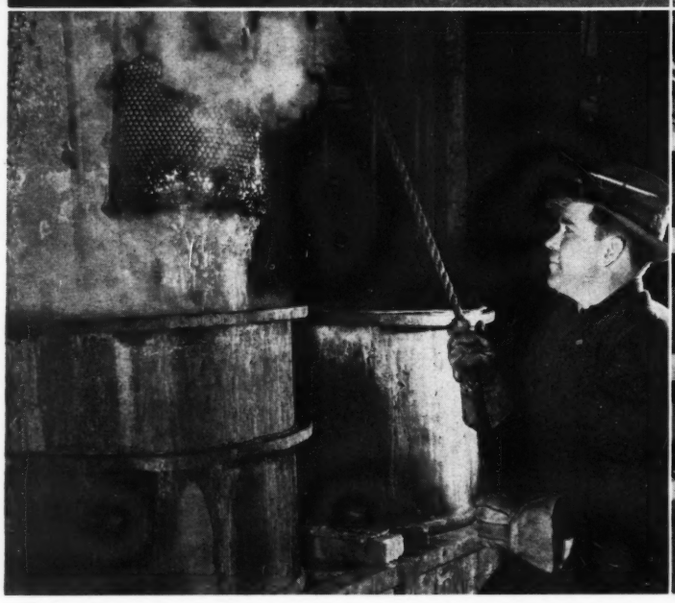


FIG. 1. (above). Heading the gas salvage operations division is Norbert E. Brahm (left) in consultation here with his assistant, John Laurie. Their attention is centered on a gas valve freshly removed from the ground. Beside it is a different type valve which was in about the same state as the rust-covered one before being reconditioned.

FIG. 2 (above). From this pile of old meter branches, Emmett Jacobs is picking out parts which can be restored to good-as-new condition. Pieces that cannot be salvaged are sold for scrap.

FIG. 3 (below). This steam-bath process maneuvered by Ray Beaver boils and rinses gummy substances from fittings and nipples. Besides 10,700 fittings, 9200 nipples were so treated in one year.

FIG. 4 (below). When small tees, elbow joints and the like are required in the gas department, here is the first source of supply. It is in these bins that such used material is stored after being reconditioned. Formerly such articles would have been scrapped with no attempt at salvage.

WILL YOU HELP US SAVE RUBBER FOR UNCLE SAM?

A special announcement by your Gas Company regarding war-time service calls to homes

THE war-time shortage of tires has made it necessary to change the routine handling of gas service calls. Possibly these changes will not affect or inconvenience you at all. But in the interests of conservation — your call for service must now be combined with others in your district for efficient daily routing. This will help to prevent duplications of trips when one trip can cover an entire neighborhood and save rubber.

For those who are moving we will try to complete "turn-on" orders the day following receipt of the order, unless some later date is requested. "Turn-off" orders may require a few days longer. Adjustments on your gas appliances or other calls on your Gas Company for service will also require more time. *Only emergencies of the most urgent nature can be taken care of on the same day received.*

In addition the following cooperation will be appreciated:

1. Please do not request an appointment with the service man for a definite time of day (so that your call may be grouped with others).
2. Please do not ask for any service work to be done at your home after 5 P.M., or on Sundays and holidays.

You can rest assured that your call will be cared for as soon as possible under these war-time conditions. And, of course, your Gas Company looks forward to the day when it can resume the prompt service to which you have become accustomed.

SOUTHERN CALIFORNIA GAS COMPANY
SOUTHERN COUNTIES GAS COMPANY

One of the best ways to keep the public informed is through advertising. This advertisement of the Los Angeles gas companies carries to the public a clear, concise appeal for cooperation in the saving of rubber.

Rubber Conservation

WASHINGTON experts last month came up with some gloomy figures on rubber. By 1944's end, counting imports at 98,000, guayule at 5000, and synthetic at 362,000 tons, the United States rubber supply will fail to meet the demand for civilian and military use, for lend-lease and other exports by 1,047,000 tons.

Last month (page 22), *GAS* published a series of reports on steps taken by gas utility industries to conserve rubber. These reports continue.

Oklahoma City, Okla.: (Report from R. K. Osborn, president, The State Fuel Supply Co.) This company, which serves about 20 towns in Oklahoma with local distribution and transmission natural gas lines, in addition to placing some limitations on service calls is using rental cars in place of company automobiles in making trips from headquarters into the field. We have advised all employees not to use their cars in our business except when absolutely necessary. While we formerly used chains on tires of cars which operated in our gas fields, through mud or snow, we discovered that some chains wore out too frequently and that mud-tires served the purpose better and more economically. After that we equipped such cars with an extra set of mud-tires, using them to replace the regular tires temporarily when contending with bad roads. Worn-out rubber tires are now replaced with mud tires.

Dallas, Texas: (Report from Lone Star Gas Co.) In smaller communities, to whatever degree possible, bicycles will be substituted for service shooting. Increased departmental coordination is to be striven after to implement doubling up in use of cars. It is possible that in time horses will be more extensively used for line riding. It is likewise possible it may be found desirable to establish a central information pool, to facilitate doubling up.

Lawton, Okla. (report from W. Schumacher, mechanical engineer, Southwest Light & Power Co.): Most of the company's requirements are for tubes and casings for automotive equipment. Automobile use has been drastically curtailed. Instead of using company trucks for inter-company transfers, rail and other types of common carrier are used. Wherever possible substitute materials are used for rubber gaskets and other such materials.

Natural Gas Torch Used in Ship Yards

By M. A. RICHFORD

Pacific Gas and Electric Co., San Francisco, Calif.*

IN shipyards, as well as in other heavy steel fabricating industries, large capacity, portable, air-gas torches of light weight are useful in a multitude of ways, especially for preheating, bending and shaping of pipes, tubes, and sheets before fabricating.

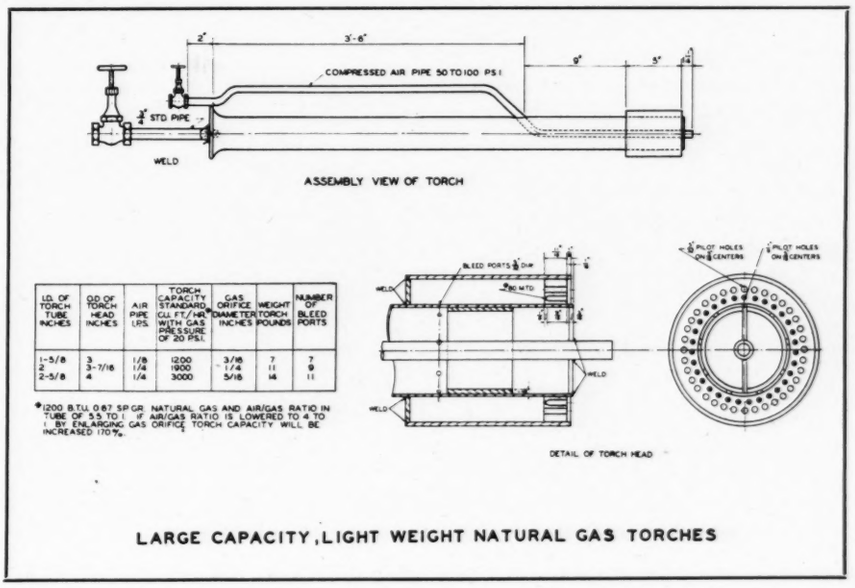
Problem: Numerous torches for natural gas are on the market, but, in general, none of them possesses large gas burning capacity and light weight.

Solution: Most large industrial plants are served natural gas under pressure of from 5 to 20 p.s.i. Advantage has been taken of this gas energy, in the torch shown in the drawing which is reproduced on this page, to inspirate atmospheric air to supply up to one-half of theoretical air requirements, thus providing a moderately soft flame for general preheating under single valve control and requiring no compressed air. The flame is exceedingly stable and lights easily whether the gas valve is wide open or not.

When a more concentrated, high temperature flame is desired, compressed air is released into the flame just beyond the end of the torch head. The supplying of compressed air in this manner does not decrease flame stability under any degree of air adjustment and, in addition, permits the tube to be more completely utilized for gas burning without flame "blow-off" by relieving the tube of carrying this air.

Thin wall steel tubing provides light weight and strength. The design is simple and torches can be built in most plants at low cost.

*Gas Utilization Data Bulletin No. 101, issued Aug., 1941, by Pacific Coast Gas Association, 447 Sutter St., San Francisco, Calif.



I.D. OF TORCH TUBE INCHES	O.D. OF TORCH HEAD INCHES	AIR PIPE I.P.S.	TORCH CAPACITY STANDARD CU. FT./HR. WITH GAS PRESSURE OF 20 P.S.I.	GAS ORIFICE DIAMETER INCHES	WEIGHT OF TORCH POUNDS	NUMBER OF BLEED PORTS
1-5/8	3	1/8	1200	3/16	7	7
2	3-7/16	1/4	1900	1/4	11	9
2-5/8	4	1/4	3000	5/16	14	11

*1200 B.T.U. 0.67 SP.GR. NATURAL GAS AND AIR/GAS RATIO IN TUBE OF 5.5 TO 1. IF AIR/GAS RATIO IS LOWERED TO 4 TO 1 BY ENLARGING GAS ORIFICE TORCH CAPACITY WILL BE INCREASED 170%.

LARGE CAPACITY, LIGHT WEIGHT NATURAL GAS TORCHES

GAS SUPPLY CONTRACTS IN TEXAS

By T. E. KENNERLY

Sears, Blades, Moore & Kennerly
Houston, Texas

FOR many years the chief sources of fuel for industries were coal, wood, water power, electricity and oil. In the last 15 years the abundance of the supply of natural gas, together with the economical cost, have caused various industries and consumers of fuel to turn to natural gas where it is available to them.

In the state of Texas, due to the enormous gas reserves which have been discovered in various portions of the state, the availability of natural gas as a fuel has increased at a rapid rate; and from these gas reserves radiate numerous trunk gas pipe lines and branch pipe lines so that the sale of natural gas to industrial concerns is an ever increasing business for those companies and individuals producing, transporting, distributing and selling natural gas.

With the increasing production, transportation, distribution and sale of natural gas there has developed quite a distinct field in the law of contracts pertaining thereto, and it is the purpose of this article to discuss generally the more important phases of the contracts affecting natural gas which attorneys in Texas representing those in the natural gas industry are called upon to prepare.

Three Classifications

Those supply contracts generally divide themselves into three classes:

1. Contracts involving the purchase of natural gas from the producer at its source.

2. Contracts involving the purchase of natural gas by industrial consumers from the distributor.

3. Contracts involving the purchase of natural gas by utilities and others.

These will be discussed in this order.

Many contracting parties would avoid much misunderstanding and litigation if they recognized the advisability of and the necessity for the preparation of gas supply contracts with considerable care. Some persons believe a letter between the contracting parties sufficient, and that the necessary provisions will be assumed from existing customs and usages. The importance of contracts, and the necessity for detail, have varied enormously over the centuries, as one can see who delves into the history of the subject. The late Colonel W. S. Simkins, once Professor of Law, University of Texas, in his work on *Contracts*, has given an introduction to this subject that is very emphatic:

> "The field of contracts is as broad as the field of human affairs and as varied as the ingenuity of man; and the essential elements that enter into the definition of a contract have been evolved out of the experience of mankind, and the wisdom of the ages has declared them to be proper limitations on the dealings of men, as they fix the boundaries best calculated to insure equality and justice."
>
> Chief Justice Marshall has said that:
>
> "A contract is an agreement in which a party undertakes to do or not to do a particular thing."

A contract, both in its origin and analysis, is a form of obligation. The earlier uses to which contracts were put consisted principally in creating a legal relation by which a promisor was bound to perform a single act for the benefit of a promisee, or in the creation of a relation of a debtor and a creditor. Later, contracts were employed to record more complex business ventures of the parties, and such instruments put in writing numerous promises and forbearances of two or probably many parties. The average contract today is usually so drawn that in the event of a breach thereof the party injured may demand specific performance by the promisor or may, at his option, seek damages for failure of the promisor to perform the obligations imposed upon him by the instrument. Some contracts stipulate a fixed sum as liquidated damages in the event of a breach thereof in lieu of leaving the question of damages to a jury.

As to the enforcement of some early Roman contracts, the promisor subjected himself to the wrath of the gods in the event he broke his promise, and oftentimes the penalty for the breach of a contract was excommunication. A less drastic penalty included in contracts made by the Romans was one in which the promisor poured out a drink of wine and called upon the gods to witness his promise. Probably the early Roman contract which required the most formality was one that took on the form of a symbolic sale, made before five witnesses and before an officer, probably similar to a notary public, who held in his hands official scales. A regular ritual then took place between the promisor and the promisee in which a formal dialogue was recited, and the scales were then balanced with coins.

Early Texas Law

It was not uncommon in Texas, in early days, for formalities and rituals to take place concerning contracts. In fact, when Texas, before its statehood, was a part of the Republic of Mexico, when a settler contracted for a tract of land he went through a certain ritual. It is said that in certain instances he would go upon the land, break twigs, throw rocks, kick up dirt and shout in a loud voice as evidence of the contract and of his ownership of the land.

For a long period of time, for a contract to be considered legal it must have affixed thereto the private seal of the parties to the contract. Sometimes instead of a formal seal and written contracts the early settlers considered their word their bond, and only a handshake sealed the oral contract. For the Indians, the smoking of the peace pipe was the acknowledgment of a contract.

Private seals were not necessary in Texas before 1840, but from 1840 to 1858 a seal was a necessary and important part of a contract. Before 1840 no particular contract had to be in writing. By the Act of 1840 a part of the English Statute of Frauds, commonly known as the Statute of Twenty-nine, Charles II, was passed. There are various phases of this Statute of Frauds which are not pertinent to this discussion, but it is important here to say that one provision of this statute re-

T. E. KENNERLY

T. E. KENNERLY has been engaged in the practice of law in Houston, Texas, for about 17 years, during which time his opportunity for observance of natural gas supply contracts has been extensive as he has been of counsel for various clients—suppliers of natural gas — among them Houston Oil Co. of Texas and Houston Pipe Line Co.; also Houston Natural Gas Corp., a system which consolidated Tex-Mex Natural Gas Co., Gulf Cities Natural Gas Co., Texas Natural Gas Utilities and Houston Natural Gas Co.—Editor.

quires that a contract be in writing or evidenced by written memoranda if it is not performable within the space of a year from the making thereof. Likewise, contracts involving the sale or lease of real estate for a longer term than one year must be in writing.

While the Texas Statutes of Fraud may not apply in many instances involving natural gas, yet the nature of the commodity, its relation to real estate and the period of time covered by each contract make those connected with the gas industry cognizant of the fact that the proper preparation of contracts involving natural gas necessitates that they be written out in detail.

In recent years, contracts in this particular field have grown in importance and require wording that is practical and is "common horse sense" rather than wording that is theoretical and impractical and which is not understood by laymen. Nevertheless, in the preparation of these contracts the attorney should have available to him gas engineers to approve the technical wording necessarily employed in the instruments, as distinguished from theoretical or impractical wording, to determine whether or not such terms bring about the desired results.

PART I

Contracts Involving the Purchase of Natural Gas from the Producer At Its Source

Contracts in this category relate usually to those made by pipe line companies with the owners of gas wells in particular fields. In typical situations, wells producing dry gas are connected by gathering lines to the pipe line company's system and meters are installed at each well. Adequate provisions should be included in such contracts specifying which party must install and maintain such gathering lines. Usually the buyer of gas wants the meters installed as near the main pipe line as possible so as not to pay for any leakage, while on the other hand the seller desires the meters placed as close to the wells as possible to avoid line losses of gas.

There are numerous wells in this state producing, along with gas, distillate or condensate; and oftentimes an attorney is called upon to appropriately word a contract either to permit the takings of gas from the separator set up at each well, or to permit seller, at its option, to install a central separator and probably a processing plant, in which event buyer will be obligated to take residue gas.

In some instances where residue gas is taken from a central plant, the facts require that the contract contain some provision making it possible to determine the amount of gas run from each particular well to the central plant, for the royalty ownership may vary on different wells included in the contract, and this is usually done by providing for check meter at each well.

Typical Contract

For the purpose of discussing a typical contract involving the purchase of natural gas from the producer, at its source, let us consider the following usual situation:

John Smith and wife execute an ordinary Producers 88 Revised—Texas oil and gas lease to a gas and oil company, covering 1000 acres in a prospective area for oil or gas production. Upon the drilling of a test well natural gas is discovered at a depth of about 5000 ft, and the well is completed as a natural gas well with, we will say, a shut-in pressure of 2000 lbs. pressure on a tubing and casing and with a capacity of 100,000,000 cu. ft. a day. The well is located 10 miles from a pipe line. The problem which then confronts the operator of this 1000-acre lease is how to market the gas and thus keep the lessors satisfied and make the venture profitable to itself. The factors determining the density of wells to be drilled on a known structure depends first upon how many offset wells are required, and second, how many gas wells are necessary from an engineering standpoint. Sometimes a well to every 160 acres, or even more, is sufficient, and again 80, 40 or 20 acre spacing may prove necessary. The Railroad Commission of Texas does not regulate density, but specifies only minimum distances between wells.

A pipe line company which owns the pipe line 10 miles from this well desires to make a contract for this gas supply with gas and oil company. It usually would not have to consider including John Smith and wife in the contract for the reason that in most oil and gas leases on the Producers 88 Revised form commonly in use there is set aside to the lessors one-eighth of the net proceeds derived from the sale of gas at the well, hence the lessee, gas and oil company has the right to sell 100% of the gas.

The first provision usually included in such a natural gas contract is an agreement either by seller or buyer to lay, construct and maintain, at its own expense and risk, a suitable sized pipe line, in inches from said well to main line of pipe line company. In a case such as the typical one under consideration, it would be too great a distance ordinarily for a seller to obligate itself to construct a pipe line and the buyer usually would construct the line to the mouth of well or to edge of the 1000-acre lease, if buyer determined that there was sufficient merchantable gas available to justify the expenditure. The buyer usually would maintain in its line a working pressure between a maximum of 450 lbs. to the sq. in. and a minimum of 275 lbs. to the sq. in., and a contract should provide that the seller equip its well with an adequate and suitable high pressure regulator with a minimum working pressure in excess of the main line pressure maintained in buyer's line, and seller should obligate itself to deliver gas at a natural working pressure sufficient to repel the pressure in buyer's main line. Some provision should be made in the contract concerning the right of way and easement necessary for the pipe line laid to the well, and the contract should contain a provision by which seller assigns to buyer all rights given it by John Smith and wife to lay pipe lines across the 1000 acres.

Meter Installation

The second matter usually involved is the question of who should install the meter for measuring gas delivered to buyer, and where it should be located. If only one well is involved, the location of the meter usually depends on who pays for installing the branch line. If seller installs the branch line, buyer usually insists that the meter be placed at the tap on its main line where same is more accessible and in order that any loss in gas between the well and the main line would fall on the party so constructing the line, and in that manner buyer would not pay for lost gas. On the other hand, if there is more than one well involved and the branch pipe line is installed by buyer, the contract usually provides in such instances that a meter be placed at the mouth of each well at the cost of buyer. Some provision should be made that the meter be of suitable size to measure the gas from each well properly. The contract should provide that buyer keep charts showing the amount of gas purchased each hour of the twenty-four, and that seller have the right at all reasonable hours to inspect such charts. Oftentimes a seller may desire a provision in the contract permitting it to install check meters; and then some suitable provision must be included for correcting inaccurate registering of meters of seller, including provisions as to who should pay the cost of testing the accuracy thereof. Contracts vary as to when a meter is

registering correctly, but the usual provision is that a registration within 2% or 3% of correct shall be considered accurate.

It is obvious that the buyer desires only merchantable gas in its pipe line, and a mandatory provision from the standpoint of buyer is that the gas delivered be merchantable. Usually the term "merchantable" is defined as being dry gas, free of sulphur and fluid. Some contracts use the foregoing expression while others simply provide that seller shall not deliver, nor shall buyer take or pay for, any gas which by reason of its composition is unusable. In some contracts there is the provision that gas is not considered by the parties as merchantable in quality and reasonably free of free liquids when containing in excess of 40 grains of sulphur or 20 grains of hydrogen sulphide per M c.f., or 1% volume of oxygen. Besides the above definitions of merchantable gas, should the gas being purchased be residue gas, in addition to the foregoing specifications a provision ordinarily is included that the residue gas shall not contain more than 1/10 gal. of liquefiable hydrocarbons per M c.f., as determined by the charcoal absorption method, as prescribed by the American Gas Association in its Code for Testing No. 101, effective January 1, 1933. Another matter to be considered in the term "merchantable gas" is the B.t.u. content. Most contracts involving the purchase of natural gas from the producer at its source simply provide that the B.t.u. content for gas to be merchantable shall not fall below 900 B.t.u.'s per M c.f.

Most Important Provision

Naturally the most important provision of any contract is that pertaining to revenue to be derived from it, and the price clause of gas contracts needs careful wording. If the gas field is large and buyer has quite an extended pipe line system, it is possible that both buyer and seller would want a fixed provision for the payment of, say, from 2¢ to 5¢ per M c.f. for the gas at the well. In several contracts which the writer has observed, where the pipe line facilities of purchaser are quite extensive, in lieu of a clause setting a fixed price for the gas an alternate clause is placed in the contract providing for a fixed payment or the payment of an equivalent of 30% of the average wholesale price charged per M c.f. by buyer and its subsidiary pipe line companies, whichever figure would be the larger.

Such price provisions for gas can become quite involved, and require careful wording and consultation with both accountants and engineers of buyer. If the typical contract is one involving a small gas field or even a large gas field but where buyer does not have such extended facilities for determining the price factors, it has proven satisfactory to include prices for gas either on a fixed cent basis or probably a sliding scale downward. For example, numerous contracts set up a scale for determining the amount of gas taken, averaged over any one calendar month, in the following manner:

a. For the first five hundred thousand (500,000) cubic feet of gas taken per day, averaged over any one calendar month, Five (5¢) Cents per one thousand (1,000) cubic feet;

b. For the next five hundred thousand (500,000) cubic feet of gas taken per day, averaged over any one calendar month, Four (4¢) Cents per one thousand (1,000) cubic feet; and

c. For all gas taken over one million (1,000,000) cubic feet per day, averaged over any one calendar month, Three (3¢) Cents per one thousand (1,000) cubic feet.

One matter to be considered carefully is what provision can be placed in the contract by a producer of gas to protect him against future gross production and similar taxes. If the contract be for a term of only a few years it is not uncommon to say nothing about taxes of this sort. However, if the contract is one which will extend over the life of a field, some provision by the producer and by the pipe line carrier and the marketer concerning increased taxes is usually insisted upon and should be included in the contract. During these times when it is so popular to increase taxes on commodities which are easy to single out and check by the tax collector, some safety valve as to taxes should be included in the contract ohterwise, there will not be a fixed price for the gas which is being so sold and purchased, but to suggest a practical provision in a contract is indeed a problem. To anticipate what the Legislature or Congress will tax is about as predictable as what a jury, the weather or a woman will do. Some attorneys provide in this situation that the purchaser will add to the price of gas any increased amount of tax payable by the producer on the gas up to 100% of the current tax. Other contracts as to this provision have provided a sliding scale whereby the producer and the purchaser of gas split all increased taxes thereon equally. Still another provision that may be included in a contract extending over the life of a field is a fixed price of gas for, say, a five-year period, and if at the end of that time there are new or additional taxes which have been validly levied or assessed upon gas delivered by seller or received by buyer, then it is provided that the affected party should have the right to cancel or terminate the contract upon, say, 30 days' written notice to the other party, but further provided that the party to whom such notice is given may nullify the effect thereof by reducing or increasing the price of gas to an extent sufficient to cover and absorb such additional tax.

A simple clause where the consumer assumes the taxes may be worded substantially as follows:

"Consumer shall also pay unto Company any new or additional or increased production, transportation, sales, excise, severence or distribution tax or other charges (or Consumer's proportional part of same depending upon its consumption of gas hereunder) assessed or fixed by any governmental authority against Company in connection with or on account of the gas furnished or to be furnished Consumer hereunder and which Company may be obligated to pay in the first instance, during the term of this agreement."

Recently the Rate Committee of the American Gas Association accumulated several samples of automatic adjustment clauses as suggestion to be considered in rate schedules to cover not only the question of taxes but inflation and other uncontrollable major swings in price levels:

TAX ADJUSTMENT CLAUSES

"The rates above do not include taxes. A percentage will be added to the rates shown to cover the taxes assessed against the Company. This percentage will be calculated by dividing the total annual tax accrual of the Company by the total annual gross operating revenues of the Company. The percentage will be initially based on taxes and revenues for the year 1939 and thereafter redetermined annually. This initial percentage is 18.0%."

"Plus the applicable proportionate part of any new, or any increased rate of any existing tax, impost, assessment or charge, except ad valorem property and net income taxes, imposed or levied by any governmental authority as the result of any new or amended laws or ordinances enacted after January 1, 1940, which is assessed or levied against the Seller or directly affects the Seller's costs of operation or is added to or made part of the cost of gas purchased by the Seller, and which the Seller is legally obligated to pay."

"For All Tax Increases Above Those of a Specific Date

"(a) Plus an amount equal to the proportionate part of any directly allocable taxes in excess of those in effect....., 194....., and

"(b) Minus or plus 0.1% of the amount computed in accordance with the above stated Rate for each 0.1 decrease below or increase above ——% in the percentage ratio which non-allocable taxes bear to electric operating revenues, exclusive of revenues resulting from rate adjustments, for the first twelve of the thirteen fiscal months preceding the current regular billing period, as shown by the books of the Company."

"For All Taxes and Used with Rate Schedules Expressed Net Before Any Taxes

"(a) Plus an amount equal to the proportionate part of any directly allocable taxes, and

"(b) Plus 0.1% of the amount computed in accordance with the above stated Rate for each 0.1 in the percentage ratio which non-allocable taxes bear to electric operating revenues, exclusive of revenues resulting from rate adjustments, for the first twelve of the thirteen fiscal months preceding the current regular billing period, as shown by the books of the Company."

"COMMODITIES ADJUSTMENT

"The monthly amounts computed at the above net rate, after adjustments for B.t.u., shall be decreased or increased half of 1% for each whole point decrease below 70 or increase above 110, respectively, in the average of the three most recently published current monthly values for the 'all Commodity Index' taken from 'Wholesale Prices' compiled by the United States Department of Labor (adjusted to a 1926 base if any other base be employed)."

Another important provision of a contract involving the purchase of gas from the producer at its source is the measurement bases employed. Most typical contracts provide that gas deliveries be measured in units of 1000 cu. ft. of natural gas computed at a pressure base of two (or sometimes four) lbs. per sq. in., above an assumed atmospheric pressure of 14.4 (or 14.7) lbs. per sq. in., with an assumed standard base and flowing temperature of 60° F. and an assumed standard base and flowing gravity of 6/10, and that said gas shall be assumed to follow Boyle's Law.

The term of the contract is, of course, important, but no comments would appear to be helpful as to this except that tax clauses, as set forth above, are usually not considered necessary in short term contracts but only in those extending over a period of years.

There should also be included in such contracts a provision to the effect that seller warrants the title to 100% of the gas delivered and that it has good right and authority to sell said gas. Such is usually the case where a seller has gas wells under an ordinary 88 Form of oil and gas lease. However, some oil and gas leases may render doubtful the right of seller to negotiate for the sale of more than 7/8 of the gas. Some early leases in Texas provide for a fixed price of gas and, should seller find it necessary to sell gas for a lesser price in order to obtain a market, some difficulty may arise as to the price, say of 4¢ for 7/8 of the gas and 5¢ for 1/8. Another question which often arises and which should be covered in the contract is whether buyer must pay seller its 7/8 and the royalty owners their 1/8, or whether by contract to put this burden upon seller to distribute its own royalty owners their proportionate part of the proceeds and simply provide that buyer pay to seller 100% for the gas taken.

It is also cautious, in these contracts, to provide that they are made subject to all valid Federal and State laws and the orders, rules and regulations of any duly constituted Federal or State regulatory body having jurisdiction.

PART II

Contracts Involving the Purchase of Natural Gas by Industrial Consumers from the Distributor

This category of contracts requires more technical treatment than contracts involving the purchase of natural gas from the fields. This, of course, is due to the fact that the technical engineers of the industrial consumers compute their gas requirements in terms of heat units.

A typical contract is one in which a pipe line company contracts to supply the natural gas fuel requirements of an oil refinery. Such a contract usually sets out the size of fuel line to be built to the delivery point, usually at a meter house on the refinery property. A provision must be made as to the pressures at which the gas will be delivered, which is quite a step down from the pressures maintained in the pipe line of from 275 lbs. to 450 lbs. per sq. in., as shown in the first category of contracts, to a pressure of between, say, 40 lbs. per sq. in. gauge and a maximum pressure of 150 lbs. per sq. in. gauge.

A typical contract provides for the measurement of such gas on the basis of a standard cubic foot at 4 oz. above 14.4 lbs. absolute, or in some instances 2 oz. above 14.7 lbs. absolute, both at a temperature of 60° F., adjusted to a sea-level pressure and a base specific gravity of 6/10.

Gas is sometimes sold simply on an M c.f. basis, with a clause that for said gas to be merchantable it must contain at least 900 B.t.u.'s per cu. ft. Other contracts provide for purchases on an M c.f. basis but provide for adjustments of the B.t.u. content, if the quality of the gas goes below 900 or higher than 1100 B.t.u.'s per cu. ft. Still other contracts may provide for the purchase of gas on a B.t.u. basis of exactly 1000 B.t.u.'s per cu. ft. The typical contract provides for the B.t.u. content of the natural gas being delivered to be tested at the laboratory of the pipe line company at fixed intervals, either monthly, quarterly or semi-annually, and the method employed in such testing may be with the use of standard gas calorimeters and recognized recording calorimeters which have the approval of the United States Bureau of Standards. Some contracts go into more detail in this regard and provide for arbitration in the event of a disagreement between seller, the pipe line company, and buyer, the refining company, as to the B.t.u. content and how it will be adjusted.

The meters for measuring the gas are usually installed by the pipe line company, as seller, and the contract usually provides that tests for accuracy of the meter or meters will be made at fixed intervals, and a meter registering within 2% of accurate is considered correct and no adjustment is made. In such a contract it is also wise to provide for meter failure, and a clause can be placed in the contract for estimating gas used, based upon that used for some previous analogous period of time; or it is often provided in the contract that, during meter failure of pipe line company, if there are check meters installed by the refining company they may be used until the faulty meters can be repaired.

Adequate provisions should be made in the contract for computation and check of the meter charts and for their preservation in permanent files of the company responsible for reading them for the future reference of the parties.

Considerable thought should be given to the inclusion in the contract of an appropriate force majeure clause to provide for the failure to take or deliver gas when occasioned by fire, strikes, riots, explosions, acts of God or the public enemy. While most pipe line systems are so constructed with respect to loop lines and varied sources of gas supply as to render remote the possibility of an interruption in the supply of gas, nevertheless in some instances the industry being served will demand the insertion in the contract of an oil fuel clause so that in the event of a failure of the supply of natural gas seller agrees, within 24 hours, to furnish fuel oil at a cost equivalent to the cost of the gas until the interrupted service is restored; and if this is not done buyer may purchase fuel oil on the open market and bill pipe line company, as seller, for any amount over the cost of gas.

Injuries and damages to persons or property growing out of the use of natural gas are not at all frequent or numerous, but a cautious lawyer will carefully cover this possibility in drafting such a contract. The liability clause is built up around the general assump-

tion and customary provision that, with respect to the delivery of gas, the responsibility of seller ceases when the gas leaves the regulator at the meter site, and the responsibility of the consumer there begins, although the facts may alter the case.

PART III

Contracts Involving the Purchase of Natural Gas by Utilities and Others

One rather important use of natural gas along the Texas Gulf Coast is for fuel for drilling rigs where a source of supply is available either from a nearby gas field or from a pipe line. These contracts are unique in their brevity and simplicity, about the only terms necessary being provisions as to who will lay the temporary line to the drilling site, the point at which the meter will be installed, the price and pressure base at which the gas is sold, and the fixing of liability for damage or injury occasioned persons or property by the use of natural gas.

The contract for the purchase of natural gas by a domestic consumer from a gas utility in a city is indeed a simple matter. All that a domestic consumer wants is merchantable gas at a fair price, with pressure sufficient for his needs, and he is not concerned so much with provisions about the B.t.u. content or what constitutes merchantable gas. He simply signs an application with a gas utility for gas at his residence and agrees to pay his bill.

The necessarily complicated features of a contract with each domestic consumer are obviated by the detailed contract between the gas utility and the pipe line supplying the gas, plus the protection offered him in city franchises or contracts with the gas utility. As to terms, these utility contracts follow rather closely the pattern of industrial contracts heretofore discussed. The main difference existing between them is that the natural gas purchased by a utility is resold, in most cities, to industrial, commercial and domestic consumers, and each category usually has a different rate schedule; and most contracts provide for city-gate rates to be divided into four categories: first, the price to be paid to the pipe line company by the utility for all gas sold for domestic consumption; second and third, a somewhat lesser rate for all gas sold by the utility company to commercial and to industrial consumers; and fourth, a certain rate which the gas utility must pay the pipe line company for unaccounted-for gas.

This unaccounted-for gas provision is usually not found in the contracts discussed in categories I and II of this article, but it becomes necessary where gas flowing through the same master meter into the same system is resold by the purchaser at varying prices to different classes of its consumers. Unaccounted-for gas is occasioned by losses from leakage, plus that lost when the utility adds up the total of all domestic, commercial and industrial meter readings and compares that figure with the deliveries of gas to it at the city gate. Depending on the particular facts, such contracts should include an appropriate definition of unaccounted-for gas.

CONCLUSION

The story is told of a blacksmith who was unusually fond of his family, and one day before the discovery of the Pasteur treatment was bitten by a mad dog. He realized that while he then possessed all of his faculties he would not harm his family, but in a few weeks he would himself go mad, lose his faculties and endanger his loved ones—so he beat out bands of steel and placed them about his ankles and chained himself to his anvil, telling his wife to bring him food and drink and place it at the end of the chain. He soon took the terrible malady, but his family was secure from danger from their loved one due to adequate preparation on his part.

Two individuals or companies may be on the most friendly terms and no carefully drawn contract seems necessary at all; yet by changes in management, changed conditions, or assignments of rights in contracts to others, numerous questions and disputes arise.

It is a lawyer's duty to guard against such contingencies and prepare a fair and workable contract for his client; but at the same time he should attempt to mold the provisions of the contract into bands of steel so as to hold that friendly individual or company if, in the future, by assignment, change in management or other change in condition, such a one contracts rabies.

New Gas Floor Furnace Standards

ON December 4, 1941, at the instance of the Association of Gas Appliance and Equipment Manufacturers, a general conference of representative manufacturers, distributors, and users of gravity circulating type gas floor furnaces adopted a recommended commercial standard for this commodity. Those concerned have since accepted and approved for promulgation by the United States Department of Commerce through the National Bureau of Standards, the standard effective for new production from May 25, 1942.

The purpose of this standard is:

1. To establish minimum specifications for the guidance of manufacturers, distributors, and users of gravity circulating type, natural draft gas floor furnaces.

2. To avoid delays and misunderstandings.

3. To provide a uniform basis for guaranteeing compliance through the use of labels or certification.

With the latest American Standard Approval Requirements for Central Heating Gas Appliances Z21.13 published by the American Gas Association as basic prerequisites, this standard covers construction and installation requirements for gravity circulating type gas floor furnaces, including those having single or dual wall register outlets, for use with natural, manufactured, mixed and liquefied petroleum gases. It includes the sizing, placement, general installation requirements, venting, gas connections, and methods of certifying compliance with the standard.

Copies of this standard may be obtained from the National Bureau of Standards, Washington, D. C.

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R. L. Minckler Heads OPC's Petroleum Supply Division

Creation of a new Division of Petroleum Supply in he Office of Petroleum Coordinator, with Robert Lee Minckler in charge as director, has been announced by Coordinator Harold L. Ickes.

It will be the responsibility of the new division to coordinate action on the many complicated and overlapping petroleum supply problems in a manner that will assure the availability of the required kinds of products at the right time and the right place, in quantities which, if possible, will meet demands.

Mr. Minckler comes to the Coordinator's staff from his duties with the General Petroleum Corp. of California, with which he was connected since 1924, when he went to work in the comptroller's department. A large part of his work was involved with statistical study. In 1934 he became assistant to the president of the company.

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Recycling Permit Granted In Joyce Richardson Field

Permission to recycle gas from wells in the Joyce Richardson field, Harris county, Texas, was granted by the Railroad Commission recently. Christian-Carpenter Drilling Co. will be allowed to produce not more than 25% of the daily open-flow potential of the field, process the gas for gasoline content, and return the residue to the horizon of its production.

U. S. Residential Gas Rates Reported

THE Federal Power Commission in February received printed copies of its initial report which shows, for the first time, the prices charged for gas service to residential customers in all cities of 50,000 population and over in the United States. The report covers typical bills for residential gas service in the 199 United States cities with populations of 50,000 or more in 1940 and having an aggregate population of 45,331,906. These cities are served by 151 gas utilities.

The new report, printed by the Senate as of Senate Document No. 122, covers the rates charged for natural, mixed and manufactured gas sold by retail distributors, whether publicly or privately owned, to all classes of residential consumers. Similar reports showing gas typical bills in all communities of 250 population or more are being compiled by the Commission and will be printed as parts of Senate Document No. 122 by states grouped within the nine standard geographic divisions of the country.

Gas rates are shown in the form of typical bills for specified consumptions, which is the same method that has been employed by the Commission since 1934 in reflecting rates for electric service. This form of presentation, the report says, reduces the many types of gas rate schedules to a common denominator and shows in dollars and cents what typical uses of gas service cost the consumer. The basic information used for the compilation is derived from the rate schedules filed by the utilities, and the computations of typical bills from the rate schedules were submitted to the utilities for verification prior to printing.

Therm Basis Used

Because of the variations in the heating value of the three types of gas, rates on a cubic-foot basis have been converted to therms in the report in order to achieve comparability, as the therm is a unit of measure commonly used by the gas industry to denote the heating value of gas. Gas is usually sold, the report says, at a stated price per cubic foot, each cubic foot containing specified heating value expressed in British thermal units per cubic foot. For cooking, for example, fewer cubic feet of gas having 1,000 British thermal units per cubic foot would be required than would be the case with gas having 750 British thermal units per cubic foot. The B.t.u. content per cubic foot is indicated in each city.

Typical bills selected for the report represent four groups of residential gas consumers, as follows: (1) Bills for 5 therms and 10 therms, representing customers using gas principally for cooking; (2) bills for 15 therms and 25 therms, representing customers using gas for both cooking and water heating; (3) bills for 35 therms, representing customers using gas for refrigeration in addition to cooking and water heating; and (4) bills for 100 and 250 therms, representing customers using gas for house heating in addition to cooking and water heating.

Of the cities listed, 87 are served with natural gas and of the group all but one, Toledo, Ohio, have natural gas exclusively. In Toledo, the report notes, there are two distribution systems serving separate parts of the city, one serving natural and the other manufactured gas. In 24 cities, the report continues, mixed gas is sold; and in 89 cities, including Toledo, manufactured gas is sold.

The differences between identical bills among the 87 cities served with natural gas range from about 300% to nearly 900% for the same amounts of gas, the greater differences being for the smaller amounts of gas consumed. These differences are greater than the corresponding differences between the lowest and highest bills in cities served with manufactured or mixed gas.

For 10 therms of natural gas, typical of cooking use, consumers in Huntington, West Va., are charged 23¢, while consumers of the same quantity in Phoenix, Ariz., are charged $2.27, a difference of 887%.

For 25 therms of natural gas, typical usage for cooking and water heating, the extreme typical bills are 56¢ in Huntington and $4.65 in Decatur, Ill., a difference of 730%. The difference in typical bills for other amounts of natural gas are 606% for 35 therms, 351% for 100 therms, and 299% for 250 therms.

The difference between identical bills among the 24 cities served with mixed gas range from 119% to 282% for the same amounts of gas. The widest difference in each case, as with natural gas, is to the smallest customer, although the differences for mixed gas are less than the differences for natural gas for corresponding amounts. "While these percentages are less," the report adds, "it is also noted that the level of prices for mixed gas is higher than that for natural gas."

The 282% difference is between the 72¢ charged in Buffalo, N. Y., and $2.75 charged in York, Pa., for 10 therms of mixed gas. For 25 therms of mixed gas, the difference is 177%, between $1.81 charged in Buffalo, N. Y., and $5 charged in East St. Louis, Ill. Differences between the lowest and highest typical bills for 35, 100 and 250 therms of mixed gas exceed 100%.

The differences between identical bills among the 89 cities served with manufactured gas range from 101% to 214%, the report says. These percentages are approximately equal to those for mixed gas, the report notes, although the level of prices for manufactured gas is higher than the corresponding prices for mixed gas.

For 10 therms, the difference is 199% between the $1.49 bill charged in Indianapolis, Ind., and $4.46 charged in Spokane, Wash. For 25 therms, the difference is 103% between the $3.33 bill in Duluth, Minn., and the $6.77 charged in Jacksonville, Fla.

For 35, 100 and 250 therms the differences are 101%, 144%, and 214%, respectively, all of the highest bills being in Miami, Fla.

Cities Tested

Table 1 in the report is an alphabetical listing of all cities and contains all of the essential information with respect to residential gas rates in each. A second table arrays the cities according to the type of gas service by ranking of the typical bills from lowest to highest. In addition, the report contains bar charts in which the bills for 10, 25 and 100 therms are presented.

The compilation of typical gas bills was begun early in 1941 under the supervision of Commissioner Basil Manly to provide the Federal Power Commission and its staff with data essential to the administration of the Natural Gas Act.

The report acknowledges, with appreciation, the cooperation in the undertaking extended by the gas utilities, the American Gas Association, and the Work Projects Administration.

Copies of the new report and subsequent reports printed as parts of Senate Document No. 122 may be obtained free of charge from the Division of Publications, Federal Power Commission, Washington, D. C.

Comparative Dehydration Performance

Using Calcium Chloride and Diethylene Glycol

By C. L. BROCKSCHMIDT

Mississippi River Fuel Corp.

St. Louis, Missouri

IN DECEMBER, 1937, the Mississippi River Fuel Corp. began to operate a dehydration plant on the southern terminus of its main line at Perryville. A 35% solution of calcium chloride and water yielded dew points of 46-50° F. during the coldest months on gas treated at the maximum line pressure of 400 lbs. gage. Immediate benefits were obtained and while the dew points were not low enough to insure a completely dry line, the total liquid drained from the main line drips during winter months was reduced from 6000-8000 gals. to 1000 gals. per week, of which only 300 gals. was water.

The throughout capacity of the line was increased approximately 6%. Some trouble was still experienced with regulators freezing during the coldest weather, but on the whole, operations were satisfactory until the severe winter of 1939-40. It was found that for periods of sustained temperature below 10° F., regulators would freeze as long as water was showing at the main line drips.

The dehydration system was converted to use a 95% solution of diethylene glycol-water and operation with the new solution was begun on December 2, 1940. Winter dew points of 20-24° F. were immediately obtained and during a year of continuous operation in 1941, no water was reported from the drips. No regulators froze although some severely cold temperatures were recorded early in that year.

It is of interest to note that on December 16, 1941, the dehydration plant was shut down for four days. A few days later, after a sudden drop in temperature, regulators began to freeze at various taps in northern Arkansas and Missouri even though no water showed at the drips during the period. The situation cleared itself soon after the dehydration plant was put back into operation.

TABLE NO. 1. COMPARATIVE OPERATION OF DEHYDRATION PLANT AT PERRYVILLE STATION

Month	Average Contactor Temp.	Average Dew Point @ 400 lbs. Ga.	Liquids Removed from Gas by the Contactor: Chemical Dehydration Water	Mechanical Water	Separation Oil	Total Liquids (Oil and Water)
	°F.	°F.	Gals.	Gals.	Gals.	Gals.
1940 Operation With 35% Calcium Chloride						
Jan. 1940	67	48	8,720	654	284	9,658
Feb. 1940	67	48	7,690	954	509	9,153
March 1940	70	51	8,340	2,882	576	11,798
April 1940	74	55	8,500	2,872	913	12,285
May 1940	81	62	10,470	2,749	543	13,762
June 1940	87	68	11,480	2,773	551	14,804
July (16 Days)	82	63	5,130	2,249	143	7,522
Totals			60,330	15,133	3,519	78,982
1941 Operation With 95% Diethylene Glycol						
Jan. 1941	67	22	16,232	4,128	680	21,040
Feb. 1941	67	22	14,842	4,416	873	20,131
March 1941	67	22	16,097	4,026	631	20,754
April 1941	76	31	10,866	3,697	921	15,484
May 1941	84	39	24,100	5,951	862	30,913
June 1941	88	43	25,710	6,805	801	33,316
July (16 Days)	86	41	12,257	4,927	609	17,793
Totals			120,104	33,950	5,377	159,431

C. L. BROCKSCHMIDT

NATURAL GAS dehydration remains an important phase of operation, and operating field data such as that presented on these pages are valuable as increasing the fund of knowledge and helping the industry to select the most satisfactory installation for a given set of circumstances. Mr. Brockschmidt last month was appointed special consultant on gas problems in the power division of the War Porduction Board. He reported for duty March 12, and his work will deal principally with the administration of L-31. Mr. Brockschmidt is a graduate chemical engineer, Texas A. and M. College, 1926. The following five years he served the Lone Star Gas Co. as industrial gas sales engineer. Since 1931 and until his present connection with the War Production Board, he had been combustion engineer for the Mississippi River Fuel Corp., St. Louis, Mo., in which capacity he has dealt with special problems in gas transmission.

Fig. 1 is a conventional flow diagram of a diglycol system. To change from calcium chloride to diglycol it was necessary to replace the calcium chloride solution reboiler with a 13-plate rectifying still and to add the heat exchanger and solution preheater. The storage tank and reflux tank shown as separate units in Fig. 1 are built into the still structure in practice.

According to E. G. Hammerschmidt *Ind. & Eng. Chem.*, August, 1934), hydrates will form at 50° F. in the presence of free moisture at 415 lbs. absolute pressure. To avoid freezing the coils in a compressor station aftercooler, it is a good rule not to approach this critical temperature closer than 10°. The sprays at Perryville are adjusted to maintain a gas temperature entering the contactors not lower than 60° F.

Figs. 2 and 3 compare the equilibrium dew points obtained over aqueous solutions of calcium chloride and diglycol at various contractor temperatures. They are substantially correct for a correctly designed four-plate bubble column contactor which will dehydrate the gas to 98% of the equilibrium condition at full capacity.

Table No. 1 relates the first six months of operation in 1940 with 35% calcium chloride to the same period in

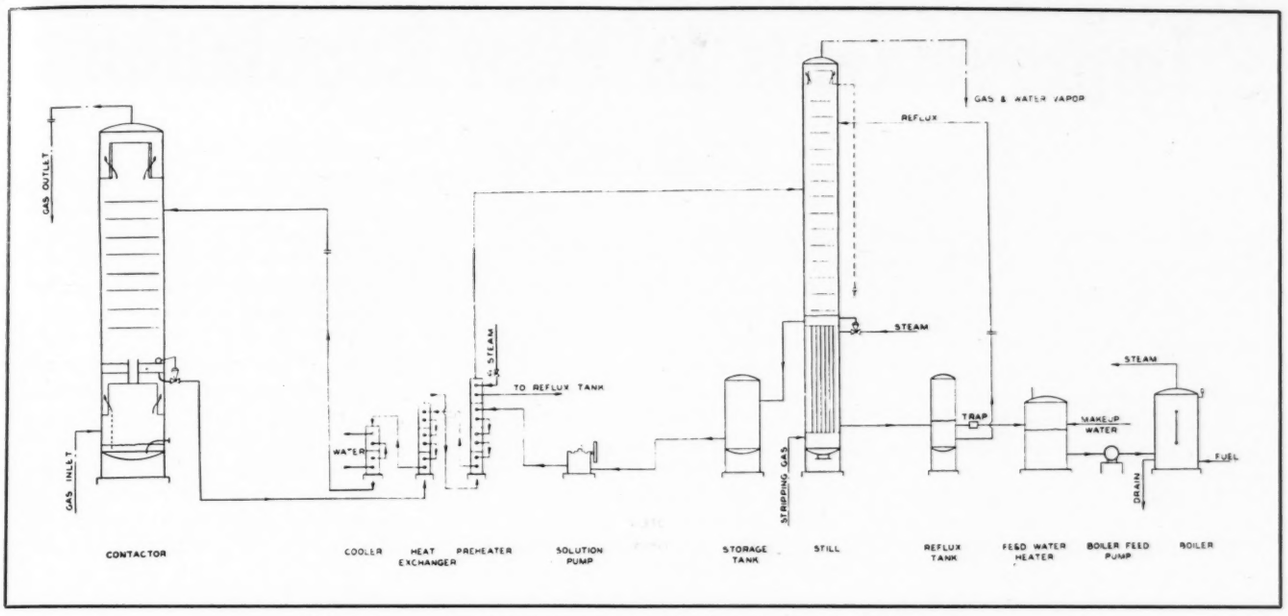


FIG. 1. Conventional flow diagram of diethylene glycol dehydration system.

1941 with 95% diglycol. The volume of water removed both by mechanical separation and dehydration was doubled during the later period.

Table No. 2 shows the nominal cost of treating 1,000,000 cu. ft. of gas with diglycol in a plant operating at 90% of capacity. The cost compares favorably with the cost of operating the calcium chloride plant the preceding year on 10% less throughout. A strict comparison of operating costs on the basis of like volumes of gas treated will show that the diglycol method costs 3¢ to 5¢ more per mm c.f. of gas treated.

TABLE NO. 2. NOMINAL COST OF OPERATING D. E. G. DEHYDRATION PLANT PER MILLION CU. FT. OF GAS TREATED

(Fixed charges and maintenance excluded)

Attendance	$0.068
Purchased electric power	.007
Boiler Fuel	.022
Diethylene Glycol	.034
Total	.131

Table No. 3 is a statement of diglycol used for treating gas during 1941. The amount of diglycol carried over with the gas leaving the contactor would be excessive if 86% of it were not recovered in pure condition by a Tracyfier drip located in the main line seven miles downstream from the contactors.

Fig. 4 compares calcium chloride with diglycol operation, with respect to liquid blown from main line drips. It will be noted that, following commencement of diglycol dehydration, the water dropped rapidly to zero by December 28, 1940, and thereafter no water was found in the drips.

TABLE NO. 3. DIETHYLENE GLYCOL USED DURING 1941

	Total Lbs.	*Lbs. per Million Cubic Feet Gas Treated*
Unaccounted for (make-up)	11,500	0.26
Recovered by Tracyfier at M.P. 7	73,200	1.65
Total carry-over from contactor	84,700	1.91

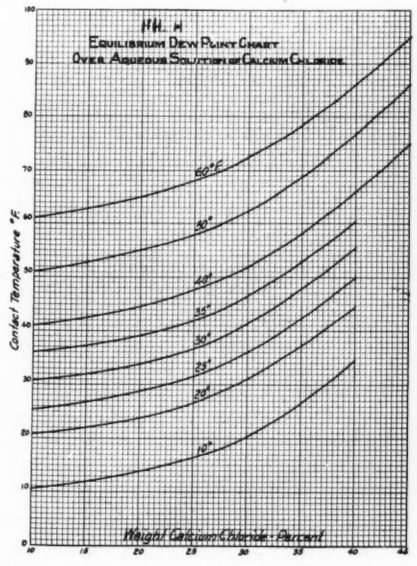


FIG. 2. Equilibrium dew point chart over aqueous solution of calcium chloride.

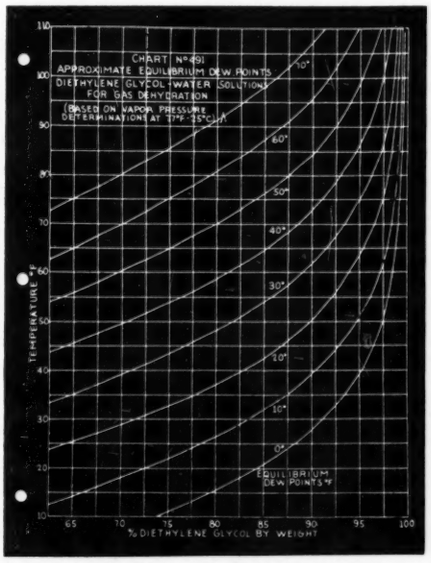


FIG. 3. Approximate equilibrium dew points diethylene glycol-water solutions for gas dehydration (based on vapor pressure determinations at 77° F.—25° C.).

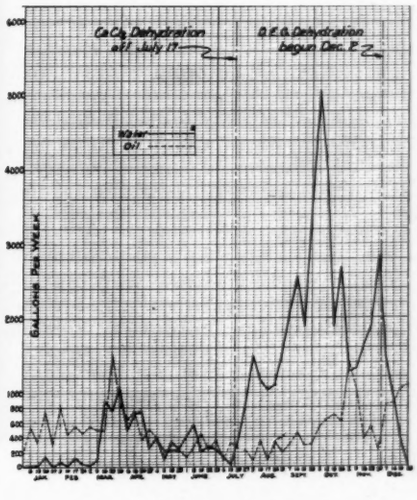


FIG. 4. Weekly liquid from main line drips—for year 1940.

Improvements in Pilot Regulation

By E. M. CLORAN
Pittsburgh Equitable Meter Company, Los Angeles, Calif.

QUITE recently the Pittsburgh Equitable Meter Co. placed on the market several regulators new in design and based on an improved pilot loading system. The purpose of this informal paper and discussion is to explain operation of this system which is of considerable technical interest, and consider the various applications of these regulators.

Pilot operated regulating valves are by no means new in the general field of gas regulation. Many different types of such valves are used in the oil fields, gas distribution systems, gas plants, etc. This is particularly true of the West Coast where, with a rapidly developing gas industry many different applications of pilots to regulating valves were devised and quickly adopted. The use of pilots permitted relatively large sensitive pressure balanced diaphragms in place of small insensitive diaphragms actuated by weights and springs, thus resulting in more accurate control and better range. It should be kept in mind that the regulators we will discuss have been developed particularly to meet the requirements of pressure control for combustion and distribution of ordinary gases such as natural, liquefied, manufactured, etc., where absence of bleeds and possible leaks are as important as accurate control.

Emco "1001" Regulator

Fig. 1 is an illustration of the new Emco "1001" Regulator (2″ i.p.s.), so named because of its many applications. It is a direct development from the requirements given above and this particular regulator has been sized to handle gas volumes up to 50,000 cu. ft. per hour and is designed to deliver accurate outlet pressures from 3 in. WC up to 20 lbs. with inlet pressures as high as 150 lbs. The acceptance of this regulator shows that it fills a long-felt need for range of pressure and volumes with accuracy of control required on industrial meter sets. It is also widely used on town border stations and small distribution systems.

Let us examine the operating mechanism of this regulator, purposely examining the main valve structure first. Note that the main valve body has a removable valve seat which has an integral valve stem guide. A single soft valve engages the valve seat, the valve being provided with a parabolic follower to give proper valve-opening flow characteristics. The valve stem is bolted directly through the follower and the valve cup, providing a unit valve assembly in which the valve stem is forced into contact up against the diaphragm (but is not attached to it) by means of the counter spring underneath the valve. This spring is sufficient to shut off the regulator tight. However, with the regulator in operation there also exists the differential between inlet and outlet pressure across the valve which further assists in closing the valve.

It is obvious from the construction that the diaphragm must push down on the valve stem to position the valve at the proper opening to maintain the proper outlet pressure. The amount and variation of this push could be easily determined if, with the regulator body only in the pipe line, one were given a pressure gage and had to push down on the valve stem by hand to regulate the pressure.

The main diaphragm, reinforced by two diaphragm plates to maintain its effective area, is clamped between the upper and lower diaphragm cases, the lower case being bolted to the valve body. A socket is provided on the diaphragm assembly to receive the upper end of the valve stem. The downward thrust from the diaphragm is caused by a pressure difference across the diaphragm. This difference occurs as follows: The outlet pressure is connected underneath the diaphragm by means of an equalizer pipe to the main pipe. A loading pressure is applied over the diaphragm and is a pressure different from and independent of the outlet pressure. This pressure in contrast to the outlet pressure is a varying pressure, controlled by the pilot regulator and is a higher pressure than the outlet pressure, thus providing the differential to force the valve open.

The pilot is of the double diaphragm design, with a toggle valve motion. Two diaphragms of equal area are bolted to a common stem and the pilot body unit assembly is clamped between spring cover flange to diaphragm case. The outlet pressure underneath the main diaphragm is carried through a bypass connection in the diaphragm case to the bottom diaphragm of the pilot. Thus the pilot regulator responds only to the outlet pressure and the gas admitted past the pilot valve is between the two diaphragms and independent of the outing pressure. Accordingly this pressure varies in accordance with the requirements of differential pressure to maintain the valve position or outlet pressure. Thus, with the pilot regulator shut in, the loading pressure equalizes to the outlet pressure, while with the main valve wide open for maximum flow the loading pressure may be one, two or more pounds higher than the outlet pressure.

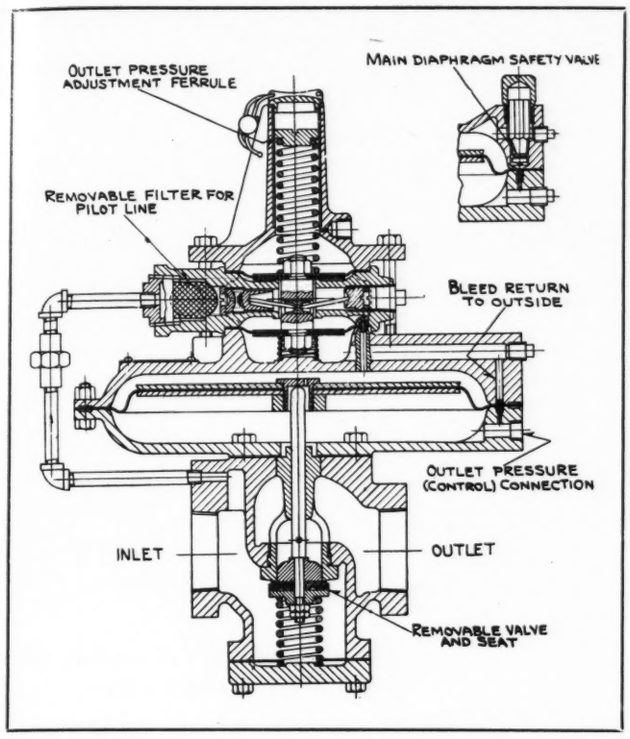
No External Bleeding

The loading pressure is maintained in stable control by bleeding constantly to the outlet side through a bleed hole through the valve stem socket across the diaphragm. This is possible because loading pressure is always higher than the outlet pressure.

Following the operating cycle, which is always a floating condition: If the outlet pressure decreases the pilot regulator responds, opening up to build up the loading pressure against the bleed. This increases the differential across the diaphragm, pushing the valve open to pass sufficient gas to maintain the outlet pressure. In reverse, a high outlet pressure will result in decreasing the loading pressure to equalize against the outlet pressure. The differential decreases and the main valve closes. Considering the flowing quantity to remain the same but the inlet pressure varying widely, the loading pressure will vary to compensate for the varying upward thrust on the valve to maintain the outlet pressure. Thus, the regulator will accurately control the inlet pressure with a single valve over a very wide range.

From the above it will be seen that the accuracy is dependent on the pilot regulator and, other things being equal, dependent on the spring deflection rate. Consequently, three different springs have been provided to take the range between 3 in. and 20 lbs. Great accuracy is obtained in the low pressure range due to the principle of providing pressure to open the valve. At low flow the regulator locks off with a very slight increase in pressure, due to the high mechanical advantage in

*Excerpt from a paper, "Recent Improvements in Pilot Regulation," presented by Mr. Cloran before a recent meeting of the Southern California Meter Association, Los Angeles, Calif.



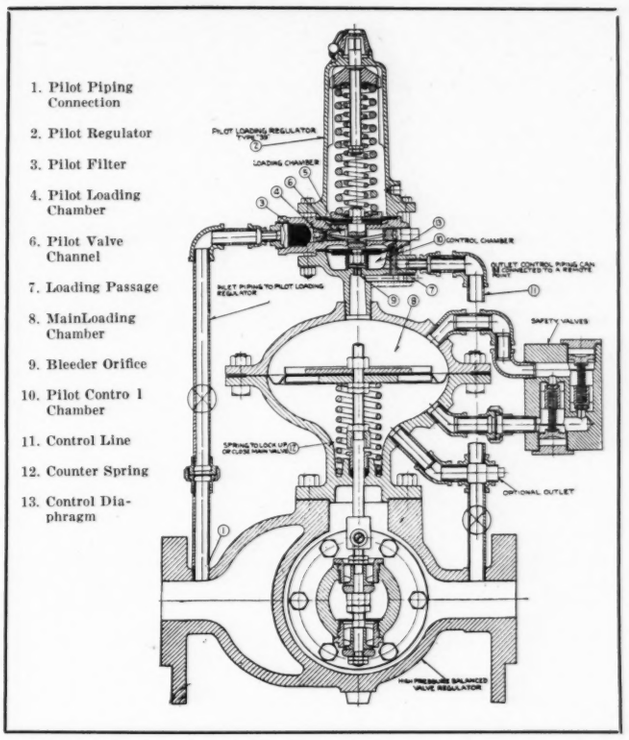


FIG. 1 (left). New Emco 1001 Regulator. FIG. 2 (right). Typical Emco pilot loading system. Outlet pressure control type regulator with valves closing upward. Pilot bleed to outlet line.

the pilot. This regulator is also available for back (inlet) pressure regulation. For this service the pressure under the pilot control diaphragm is connected to the inlet pressure, and the pilot action reversed. Thus, when the inlet pressure increases, the pilot valve opens, building up the loading pressure to a suitable differential over the pressure existing under the main diaphragm to open the main valve. Very accurate control of inlet pressure is obtained, making the regulator useful as an accurate relief valve, pipe line back pressure governor, low pressure cutoff and other services.

The pilot regulator has been designed to provide easy assembly and service of valve seat and valve disc.

The main valve assembly is serviced by removing the bottom handhole plate; the valve assembly drops out when the counter spring is removed. The natural action of the regulator provides a safety feature, i. e., should the diaphragm break the main valve will remain closed. Internal bypass relief valves protect the diaphragm from excess differential.

In effect, this regulating scheme consists of a valve floating in the gas stream, accurately positioned automatically to maintain the downstream or upstream pressure, as the service may require, without any external bleeds or adjustments except the pressure setting. In other words, it is a self contained unit.

Type 39 Pilot Loading System

In Fig. 2 there is shown another arrangement of this unit pilot loading system as applied to the Emco Balanced Valve Regulator. The balanced valve regulators give much higher capacities than "1001". The top work over the regulator body is provided as a unit which is adaptable to any of the high pressure balanced valve bodies. Regulators up to 16 in. size have been furnished with this control system. Some of the variations in design features are these: The same type of pilot used on the "1001" is used on this style regulator but the pilot is provided with a high spring cover to accommodate a sensitive, accurate spring for pressures up to 300 lbs. Three ranges of springs are provided, giving overlapping pressure range from ¼ to 15 lbs.: from 5 to 60 lbs.; and from 40 to 300 lbs. By choosing a suitable spring, accurate control from the same regulator may be obtained at any pressure within the range of ¼ to 300 lbs. A bottom adapter plate is provided by which the pilot regulator as a unit is screwed into the top diaphragm case. This adapter piece contains an internal bleed orifice and the bleed passes along the control line. By relocating the bleed orifice, the bleed may be taken to atmosphere. When bleed is taken to atmosphere, the motor spring underneath the diaphragm is omitted.

This style regulator is made for both reducing (outlet) pressure control and back (inlet) pressure control. For either type of control, the regulator can be arranged to have valve action normally closing up to seat at, or normally opening wide at zero diaphragm differential.

Recently another variation of this system was developed for application to the Emco Low Pressure Balanced Valve Regulators in low pressure distribution systems. In this development, the regulator action is designed to close normally due to the diaphragm weight urging the valves to seat. This arrangement is somewhat the same as in the high pressure system previously described. However, in this case the actuating pressure from the pilot causes the diaphragm to travel upward because of the leverage arrangement between diaphragm and valves.

This system not only provides extreme accuracy of control, but also furnishes some additional safety features for portection of the low pressure distribution system. Another feature is its self dampening characteristic: the valves are slow to open and quick to close in contrast with the simple weight loaded types which are fast to open and slow to close. By controlling the pressure supply to the pilot, the regulator can be made to act with varying speed, a feature which is found valuable in connection with the application of the automatic loading apparatus.

SALES

Movie Explains Gas Company Operations

NEW ORLEANS, (La.) Public Service Co., Inc., has completed a highly personalized educational film which is designed to give the companys' 3000 employees a better-balanced understanding of gas company operations.

A. B. Patterson, president of the utility, was pleased to endorse the film, stating he believed that every company employee actually represents the soul and spirit of a utility in daily contact with the public, and only by impressing vividly upon the minds of every employee how gas service originates is used, and distributed, would it be possible to "merchandise" gas at its best.

The new slide film, developed by W. J. Amoss of the company's advertising department, runs 25 minutes. It was produced by heads of major gas departments and the advertising department.

The dual purpose of the film is to educate employees in other than gas departments of the utility, and to build up goodwill for and understanding of gas service among appliance dealers, heating firms, industrial power users, civic groups, business associations, and even schools.

Consisting of 133 separate photographs, the film is a complete resume of the development of gas in New Orleans, from the first manufactured gas plant to the present natural gas system adopted in 1928. It explains the use of commonplace equipment which the average employee sees but does not understand, and tells in every-day words how gas was popularized as a fuel, how it is handled in various uses, and what the company has done to insure its economy.

The three major divisions in the film are production, utilization, and distribution. The use of gas in war production effort in the New Orleans area, including annealing, factory heating, welding, and other uses, is also explained. Many company personalities appear in action in the film.

■ ■

DOTTED LINE ROSCOE - - - - - - - By Bob Crosby

The sales department's savin' tires!

Defense Service Opportunity Explained to Salesmen

C. V. McCONNELL, sales manager of The Tappan Stove Co., Mansfield, Ohio, has issued a bulletin titled "Our Responsibilities" to the company's sales staff in which opportunities for salesmen to serve the National Defense Program are explained.

"The salesman on the road has a distinct opportunity for service. His opinions are respected and he can be an agency of confidence. He can quiet unthinking alarmists and help to dispel unwise or vicious rumors.

"The salesman now also has a particular duty in preserving business morale on the part of his dealers and their organizations. With necessary restrictions in materials and consequent curtailment in business, naturally dealers will be acutely affected—as will we all—certainly criticism and complaint are not in order for the man interested in his country's needs to the exclusion of his personal welfare. It is the job of the salesman to do some calm, sensible thinking with him.

"For those men whose fortunes it is to risk their lives on land and sea and in the air, it is our job to see they have the best implements of war to the last ounce that can be supplied. The salesman should be a personal example to his trade in all the national financial programs to secure these ends."

■ ■

Shell Union Oil Armed Men Get Former Civilian Salaries

The Shell Union Oil Corp. group of companies will pay the difference between military pay and company salary to married men entering the armed forces of the United States or other members of the United Nations, according to an announcement made today. The company's contribution will be up to 50% of an employee's salary at the time of his entry into military service.

Since May, 1940, Shell has granted to employees with one or more years of company service a leave of absence for duty with the armed forces, maintaining their seniority and job security, continuing payments on life insurance and giving a bonus of two months' salary. These benefits are continued and the new policy affecting married employees is retroactive to December 8, 1941.

Before a nearly life-sized reproduction of the model home as a background, and with nearly all of Worcester looking on, Mayor William Bennett prepares to draw the name of the lucky winner.

Model Home Promotion in Connecticut

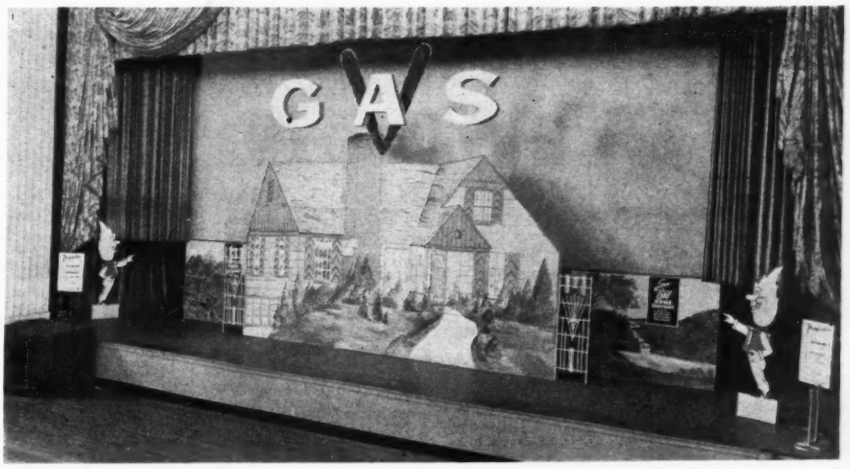
CLOSE cooperation with the building industry and an intelligent and sustained effort to create and maintain the good-will of contractors, builders, architects and housing officials has netted valuable tangible returns in the form of a greatly increased house heating load during the past year, for the Worcester (Conn.) Gas Light Co. Whereas in previous years only about 10% of the newly occupied residences used gas for heating, of those completed during the first 10 months of 1941, slightly over 42% are gas heated.

This is particularly interesting, and adds luster to the sales promotion effort of the company, when it is taken into consideration that in the Worcester area, as throughout the rest of the country, the trend is unmistakably toward houses in the $6000 and under class. Houses built to sell at prices from $3600 to $5000 now predominate, and it is estimated that at least 500 such units were completed before the end of 1941.

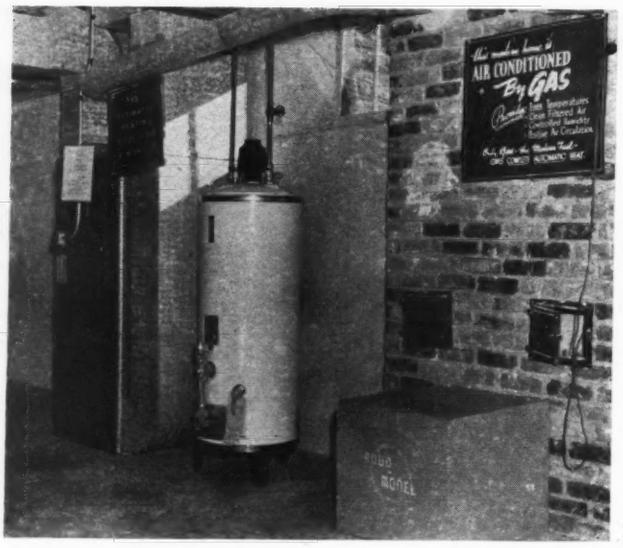
The major promotion of the year, for Worcester's home building industry has just been completed, with the giving away of a $6000 American Model Home sponsored by the Master Home Builders Association. The model home, built by the Aksila Brothers, on their newly opened subdivision, in Salisbury Hills is all gas, with Surface Combustion winter air conditioner, Ruud Automatic water heater, Servel refrigerator and a Magic Chef gas range as the utilization equipment. All gas equipment was bought by the builders, and none of the dealers in building materials, home furnishings or appliances were asked to donate any part of the supplies or material used.

Since 1939, when new house heating rates were set up, the gas company has paid particular attention to laying a sound groundwork of acceptance for gas heating. Through the medium of Dodge Reports, which give advance news on new construction when it is still in the planning or even the contemplated stage, the company keeps currently informed of everything that transpires in residential, commercial and industrial building. A special representative on building personally follows up each report, and after having secured any additional information relative to the contemplated fuel, turns the job over to one of the nine appliance salesmen for follow through to completion.

In the opinion of E. J. Bean, general sales manager of the Worcester Gas Light Co., the 1941 Home Building and Foods Exposition, the promotion built



With a front elevation of the model home for scenery, the back of the stage is devoted to a display of model rooms and modern gas appliances.



Gas-fired heating and water heating equipment in the basement of the home which was given away on the closing night of the exposition. Framed on the winter air conditioning unit is the gas company's estimate of $93 to heat the home for nine months.

around the home given away, was the most successful endeavor of this type that the utility has ever entered. A total budget of $1500 was set up for all of the expenses, including the generous use of newspaper advertising, and exhibit space in the Worcester Auditorium during the week of the exposition. In addition to the attention value of dominating newspaper advertisements, the message of the all gas home was brought to 65,000 persons who paid 25¢ each for tickets to view the exhibits. During the three weeks following the awarding of the home as a monster gate prize, the house itself was open for inspection, and was visited by 30,000 people.

In the special newspaper sections announcing the Exposition, as well as in the dominating space occupying the entire stage of the municipal auditorium where the show was held, gas was in the commanding position. Elevated at stage level, above the hundred odd exhibitors with auditorium floor space, the gas company constructed a mammoth reproduction of the architects rendering of the front elevation of the house. Backstage and behind the front of the house, were constructed and furnished, model rooms, exactly as they appeared in the completed residence. Across the aisle from the room sets, was a solid line up of gas-fired ranges, refrigerators, water heaters and house heating units.

To stimulate attendance at the show during the week special events were scheduled for every day, and door prizes were awarded by drawings held every afternoon and evening. Orchestra music and entertainment were almost continuous during exhibit hours. Cake and pie baking contests, open to both men and women were held, with cash prizes for the winners in each event.

A model exhibit of the U. S. Fleet in miniature vessels; a mind reader; glass blowers; a fashion show; U. S. Army and Secret Service exhibits were among the dozens of special attractions that were used to draw and hold the crowd.

Bob Pooley, New England radio orchestra leader, who supplied the music, became so sold on the model home that, failing to win it in the drawing, he immediately placed an order with the builders for an exact duplicate, complete with gas for the four big jobs. In the tract now being developed the builders plan the immediate construction of 22 new homes, five of which are already under way.

Due to the new pressure from the government to limit the cost of new homes to $6000 or less, Worcester anticipates accelerated activity in houses in the $5000 class, 90% of which are built here by so-called speculative builders.

The high percentage to date of gas for house heating, cooking and water heating in homes of this class presages an all-time record for 1941, and even greater activity in 1942 in the opinion of the Worcester Gas Light Co.

■ ■

Refrigerator Salesmen Win Defense Bonds in Campaign

Recently setting a new high record of gas refrigerator sales, a total of 29 men won $25.00 United States Defense Bonds for first and second place awards in the American Gas Association Refrigeration Campaign. This was the largest group of bond winners since the present series of monthly contests began last October.

Twenty-four salesmen sold 10 or more refrigerators each during the month to establish another new monthly record.

Consolidated Edison Movie Shows Employees on the Job

Something different in the way of saluting a large group of 25-year service veterans was used by Consolidated Edison Co. of New York, Inc., recently when a color motion picture of the men on their jobs and at their favorite hobbies was shown at the customary anniversary dinner attended by the 60 quarter-century men and their families.

The film, entitled "Men at Work and at Play," was accompanied by a commentary delivered by a fellow employee of the veterans and a recorded musical background. It was produced and photographed by George Cadenas of the company's editorial bureau, assisted by Rita King of the sales department. The commentator was Joseph Corcoran of the electric distribution construction department. Originator of the idea was E. E. Hill, manager, electric distribution construction, who was toastmaster at the meeting.

The picture was introduced by some close-up shots of the president of the company, R. H. Tapscott, taken while at his desk as he was writing a salutation to the group which was timed to fit the reading of the message to the audience by the commentator.

■ ■

Lone Star Home Economics Dept. Issues "Round Up"

The "Round Up," new monthly publication of the Lone Star Gas System home economics department, Dallas, Texas, made its initial appearance a few months ago. Edited by Gertrude Payne Keim, assistant home economics director, the mimeographed bulletin contains a "round up" of news about the home economists throughout the system.

First edition carried a message from Will C. Grant, advertising director, under whose supervision the home economics division is conducted. It also contained a message from Albertine Berry, director of home economics. Both editorialized on the importance of the home economist and the services she may render her country in time of war.

■ ■

United Employees Attend Night Vocational Classes

A total of 564 United Gas Pipe Line Co. (Houston, Texas) employees completed company sponsored night vocational training courses last year, according to M. V. Cousins, personnel director. Classes were held at 22 locations in nine of the ten districts.

It is reported that transportation difficulties and general conditions have not dimmed the interest and desire of employees for further training. At present the following night courses are being conducted: elementary science, elementary mathematics, advanced mathematics, blueprint reading, and internal combustion engines.

■ ■

Two Fellowships to Be Given In Natural Gas Engineering

The Natural Gas Supply Men's Fund Committee of the American Gas Association is asking now for applications for its two fellowships in Natural Gas Engineering, one at the University of Oklahoma and the other at Pennsylvania State College.

There will be an opportunity for two young men with the proper qualifications to take advantage of these fellowships in the fall. Consideration will be given to applications from any young men graduated from an accredited school of engineering.

New Wisconsin Natural Gas Plea Filed

THE Independent Natural Gas Co., a wholly owned subsidiary of Phillips Petroleum Co., has asked for a certificate of public convenience and necessity covering the construction and operation of a 22-in. natural gas pipe line from Ray, Texas, in the Panhandle field of Texas, to Milwaukee, Wis., a distance of approximately 877 miles. Independent Natural Gas Co. proposes to sell gas at wholesale to 10 public utilities operating in southern and eastern Wisconsin for resale to the public, and also proposes to construct lateral lines needed to serve the various markets, cities and communities within its proposed service area.

A prior application by Independent Natural Gas seeking a certificate for substantially the same project (Docket No. G-178) was dismissed by the Commission on April 1, 1941, for want of jurisdiction. The new application states that the amendment to Section 7 of the Natural Gas Act, which became effective on February 7, 1942, eliminates, among other things, the former limitation upon the Commission's jurisdiction, and that the new application is filed pursuant to Section 7 as amended.

According to the application, the Public Service Commission of Wisconsin held hearings on an application filed by Independent for a certificate of authority to construct and operate its pipe line system within the state of Wisconsin, with Wisconsin Gas Transmission Co., a subsidiary of Phillips Petroleum Co., acting as substitute applicant for Independent. Hearings before the Wisconsin Commission were also held at the same time on the application of Wisconsin Natural Gas Co. (a subsidiary of Western Natural Gas Co.), and on the application of the Badger State Pipeline Co. (a subsidiary of Natural Gas Pipe Line Co. of America). The application points out that a majority opinion and order of the Wisconsin Commission, dated January 2, 1942, concluded that of the proposals by the three applicants, that submitted by the Wisconsin Gas Transmission Co. (substituting as applicant for Independent) "would be to the best interests of the State and of its people, particularly when considered and applied over a long term of years."

Phillips Petroleum Co. will advance the money necessary to complete construction of the project, after which it is contemplated that first mortgage bonds and common stock will be issued as necessary to assure a sound financial structure.

Because the benefits of natural gas by pipe line are not now available to the state of Wisconsin, the Independent Natural Gas Co. proposes to sell natural gas at wholesale to the following utilities for resale to the public:

Milwaukee Gas Light Co.: Milwaukee system, serving the Milwaukee metropolitan area, River Hills, Menomonee Falls, Butler, Cedarburg, Hartford, West Bend, Port Washington, Barton, Germantown, Grafton, Jackson, Saukville, Slingre, and Thiensville.

Wisconsin Gas & Electric Co.: Racine system, serving Racine, Kenosha, Fort Atkinson, Watertown, Waukesha, South Milwaukee, Cudahy, Whitewater, Jefferson, Lake Mills, Oconomowoc, Eagle, East Troy, Genoa City, Hartland, Johnson Creek, Mukwonago, Palmyra, Pewaukee, Rochester, Silverlake, Sturtevant, Union Grove, Waterford, and Twin Lakes.

Madison Gas & Electric Co.: Madison system, serving Madison, Middleton, Shorewood Hills, and Maple Bluff.

Wisconsin Public Service Corp.: Sheboygan, Chilton, Elkhart Lake, Gravesville, Kiel, Kohler, New Holstein, Sheboygan Falls, and Plymouth; Green Bay system, serving Green Bay and De Pere; Oshkosh system, serving Oshkosh and rural; Two Rivers system, serving Two Rivers.

Wisconsin Michigan Power Co.: Appleton system, serving Appleton, Neenah and Menasha.

Wisconsin Power & Light Co.: Fond du Lac system, serving Fond du Lac, Ripon, Berlin, Brandon, Beaver Dam, Waupun, and North Fond du Lac; Beloit system, serving Beloit, Janesville, Edgerton, Milton, Milton Junction, and South Beloit, and Rockton, Ill.

Wisconsin Southern Gas Co.: Burlington system, serving Burlington, Elkhorn, Delavan, Lake Geneva, Williams Bay, Fontana, Walworth, Lyons, Delavan Lake, Browns Lake, and Darien.

Wisconsin Fuel & Light Co.: Manitowoc system, serving Manitowoc.

Stoughton Light & Fuel Co.: Stoughtton system, serving Stoughton.

Wisconsin Hydro Electric Co.: Monroe system, serving Monroe; Platteville system, serving Platteville.

Progress on the Pipe Line

Proposed

Tennessee Gas & Transmission Co., Chattanooga, Tenn. Filed an application with FPC Feb. 2 to construct a natural gas pipe line from southwestern Louisiana natural gas fields to Nashville, Chattanooga, Knoxville and other Tennessee communities. Project contemplates construction of gathering lines to transport natural gas to a point of convergence near Eunice, La., a main 24-in. line to transport gas through Louisiana and Mississippi to Brace, Tenn.; two divergent main lines, one of either 24-in. or 16-in. to carry gas to a point near Nashville, Tenn., the other of 12¾-in. to carry gas to a point near Alcoa and Knoxville, Tenn. Capacity of system: 155,000,000 cu. ft. daily, with one 5000-hp. compressor station located 282 mi. from beginning of line. Estimated that additional compressor capacity would bring total daily capacity to 300,000,000 cu. ft.

Oklahoma Natural Gas Co., Tulsa, Okla. Plans a 100-mi. 12-in. transmission line to carry natural gas from the Cement and Chickasha, Okla., fields to the new U. S. Army camp near Braggs, in the Cookson Hills. Cost: approximately $1,500,000. Capacity: 60,000,000 cu. ft. daily.

Independent Natural Gas Co., Bartlesville, Okla. Application filed with FPC March 5 for certificate to construct an 877-mi. 22-in. transmission line from Ray, Tex., to Milwaukee, Wis.

Border Pipe Line Co., Houston, Texas. Application filed with FPC Feb. 12 to build line from San Salvador Field, Hidalgo county, Texas, to point on international boundary about 40 mi. northwest of Laredo, Texas. Gas to be sold at this point to American Smelting & Refining Co. for use in latter's smelting plant at Rosita, Coahila, Mexico.

Completed

Birmingham Gas Co., Birmingham, Ala. A 2½-mi. line connecting its by-product plant with the industrial system at Acipco to make available 8,000,000 cu. ft. of gas daily.

Cities Service Gas Co., Bartlesville, Okla. A 55-mi. 16-in. electrically welded line from Caddo County Gas Field, Okla., to the edge of the Oklahoma City Gas Field, where it ties into the Oklahoma City gathering system. Capacity: 90,000,000 cu. ft. daily.

United Gas Pipe Line Co., Shreveport, La. A 204-mi. natural gas transmission line from the Lirette Gas Field, La., to Mobile, Ala. The line adds about 70% to the capacity of other lines already serving the Mobile - Pensacola area.

Conversion

Texaco Pipe Line Co. Plans to convert from oil to gas a line running from Amarillo district of Panhandle to Quanah in Hardeman county, Texas.

ASSOCIATIONS

Natural Gas Convention Meets in May

A JOINT meeting of the Natural Gas Convention and the Distribution Conference of the American Gas Association will be held May 4-7 in New Orleans, La. Headquarters for the 37th Annual Natural Gas Convention will be the Roosevelt Hotel and for the 19th Annual Distribution Conference, the St. Charles Hotel. This is the second joint meeting of the two groups; the first was in 1939 at Tulsa, Okla.

Natural gas conferences and distribution meetings will be held independently with the exception of the joint General Session on Tuesday morning, May 5. Principal speakers at the first session include C. S. Goldsmith, chairman, Distribution Committee, Technical Section, A. G. A., and distribution engineer, The Brooklyn (N. Y.) Union Gas Co., and J. French Robinson, chairman, Natural Gas Section, and president, The East Ohio Gas Co., Cleveland, Ohio.

"Natural Gas Financing Today for a Solvent Tomorrow" will be discussed at the opening general session by Edward L. Love, vice president of the Chase National Bank, New York, N. Y. Albert B. Paterson, president of the New Orleans (La.) Public Service., Inc., will represent the host city at this session of the convention.

Delegates to the Natural Gas Convention will meet in a second general session on Wednesday morning, May 6, at which time a diversified program will be presented, including such subjects as "Marketing Problems Under War Conditions," "Public Relations Yesterday, Today, and Tomorrow" and "Vocational Training in the Natural Gas Industry." At this session Harold Vagtborg, director, Institute of Gas Technology, will speak and present a new series of movies on the Institute which will show the recent progress made by the organization.

M. V. Cousins, personnel director, United Gas Pipe Line Co., Shreveport, La., and chairman, Natural Gas Vocational Training Committee, will go over the work already accomplished by his committee and describe work which will be planned as the war emergency permits on the subject of vocational training in the natural gas indutry. H. V. Coes, vice president, Ford, Bacon & Davis, Inc., New York, N. Y., will speak on "Marketing Problems Under War Conditions," and the field of public relations will be portrayed by Dr. Rex F. Harlow, professor of public relations, Stanford University, and president, American Council on Public Relations.

The Gas Industry Dinner will be held May 6. Speakers will be a government official and George S. Hawley, president, A. G. A., and president, The Bridgeport (Conn.) Gas Light Co.

CALENDAR

April

Mid-West Gas Association Annual Meeting—Sioux City, Iowa, April 13.

Gas Meters Association of Florida-Georgia Conference—Jacksonville, Fla., April 18.

Southwestern Gas Measurement Short Course—University of Oklahoma, Norman, Okla., April 21-23.

Maryland Utilities Association Spring Meeting—Lord Baltimore Hotel, Baltimore, Md., April 24.

May

American Gas Association Spring Executive Conference—New Orleans, La., May 4.

Annual American Gas Association Natural Gas Section Convention — Roosevelt Hotel, New Orleans, La., May 4-7.

American Gas Association Distribution Conference — New Orleans, La., May 5-7.

Indiana Gas Association Annual Meeting—Indianapolis, Ind., May 11-12.

Natural Gasoline Association of America—Mayo Hotel, Tulsa, Okla., May 13-15.

National Defense Exposition (Industrial-Petroleum Engineering)—Houston, Texas, May 18-24.

Pacific Coast Gas Association Technical Section Meeting—Ambassador Hotel, Los Angeles, Calif., May 21-22.

American Gas Association Production and Chemical Conference — New York, N. Y., May 25-27.

June

Canadian Gas Association, 35th Annual Meeting—Windsor Hotel, Montreal, Canada, June 4-5.

Pacific Coast Gas Association Sales and Advertising Section Meeting—Ambassador Hotel, Los Angeles, Calif., June 4-5.

Pacific Coast Gas Association Accounting Section Meeting—Ambassador Hotel, Los Angeles, Calif., June 11-12.

American Society for Testing Materials — Chalfonte-Haddon Hall, Atlantic City, N. J., June 22-26.

September

Pacific Coast Gas Association Annual Convention — San Francisco, Calif., September 28.

24th Annual Convention, American Gas Association — San Francisco, Calif., September 29-October 1.

November

Mid-Southwestern Gas Association Meeting—Dates not definite.

Production Conferences

Monday morning and afternoon sessions feature a panel discussion which will include speakers from Oklahoma, Louisiana, Ohio, Texas, California and Pennsylvania. The Monday morning discussion will have to do with "Drilling and Completion in High Pressure Areas." The Monday afternoon subject will be "Proper Production Methods." In addition the following papers which were given on February 11 before the A.I.M.M.E. meeting in Shreveport, La., will also be presented at each of these meetings:

"Practical Aspects of High Pressure Gas Well Control," C. N. Schwarz, Maintenance Engineering Corp., Houston, Texas.

"Mechanical Equipment for Protecting High Pressure Wells Against Sabotage and Bombing," John O. Farmer, Otis Control, Inc., Dallas, Texas.

Transmission Conferences

Among the subjects to be discussed during the Transmission Conference on Monday morning, Monday afternoon, and Tuesday afternoon are:

Cathodic Protection.

Vibration Elimination in Gas Engine Driven Compressors, Headers and Piping.

Main Line Automatic Shut-off Valves.

New Acetylene Welding Process.

Pictures and Discussion of Construction of Lirette-Mobile Line.

Practical Problems in Dehydration Plants Design and Operation.

Panel Discussions on Dust Removal.

Aerial Patrols, Cost and Effectiveness.

Recycling as a Conservation Measure.

Prevention of Sabotage.

Hydrate Storage.

Industrial and Commercial Gas Conferences

The entire Industrial and Commercial Gas program will concern industrial gas at work manufacturing war materials and helping to prepare food in quantity and rendering other necessary services for the military forces, workers in military factories, and civilian groups. This program will show how industrial gas engineers are working shoulder to shoulder with regular factory workers in producing war materials. Among the subjects to be presented by capable and experienced men are:

The Industrial Engineer's Place in the War Effort.

Natural Gas as a Vital Factor in the Production of War Materials.

Gas Boiler and Burner Trends in War Establishments.

An officer from the Quartermaster's Office will speak on "Problems in Providing Gas Service to War Establishments" at the Industrial Gas Luncheon on Monday.

Residential Gas Conferences

"Today's Sales Developments," a panel discussion, will be an outstanding part of the Residential Gas Sales Conference, Wednesday afternoon, May 6. Participating in this part of the program will be leading executives of the natural gas industry. Addresses on "Maintaining Customer Satisfaction During the Emergency" and "The Outlook for Gas Appliances" will also be presented. Major Forward, managing director, A.G.A., will speak at the General Industry Luncheon, Tuesday, May 5. The remainder of the program will be prepared by the Home Service Committee.

In addition to these programs there will be the usual Accounting Conference and a Conference on Accident Prevention.

All programs have been planned for the 1942 meeting with the belief that conferences between gas executives and men in supervisory positions are more important than ever. With the gas industry playing an increasingly important role in war production, it is imperative that the men who run the industry study present problems and discuss together more efficient ways of handling them in order that there may be no slow-up in the industry's contribution to the war effort. In addition, the vision of the gas industry must reach beyond the war to the period of readjustment and to the resumption of normal activities.

A. G. A. Distribution Conference

ABLE distribution engineers from all parts of the country are expected to take part in the annual Distribution Conference of the Technical Section, American Gas Association, which will be held concurrently with the Natural Gas Convention at the St. Charles Hotel, New Orleans, La., May 4-7. New problems arising from the tremendous loads placed on gas distribution systems supplying war industries, as well as problems related to material shortages, property protection, and personnel training, make this a most important conference. The program committee under the leadership of C. S. Goldsmith, chairman of the Distribution Committee, has prepared a flexible program to allow for full discussion of these new conditions.

The equivalent of one full day will be devoted to luncheon conferences at which all sub-committee reports will be made and numerous vital topics discussed informally. The presentation of papers at the regular sessions has been limited to subjects which are particularly pertinent and important during war time. Last-minute changes will be made in the program to permit discussion of the latest war-slanted developments.

The following is the tentative program:

Monday, May 4

Morning Session

Opening Remarks — C. S. Goldsmith, chairman, Distribution Committee.

Address — H. H. Cuthrell, vice president, The Brooklyn (N. Y.) Union Gas Co.

Adjustment Mechanics of a Tin Diaphragm Meter—A. V. Brashear, superintendent of meters, Michigan Consolidated Gas Co., Detroit, Mich.

Effect of Reduced Octane Fuels on the Operation of Motor Equipment—Errol J. Gay, Ethyl Corp., Detroit, Mich.

Afternoon Session

Luncheon Conference on Meters—Presiding: J. H. Collins, chairman, Sub-committee on Meters and Metering.

Report of Sub-committee on Meters and Metering.

Luncheon Conference on Construction and Maintenance—Presiding: T. H. Kendall, chairman, Sub-committee on Construction and Maintenance.

Report of Sub-committee on Construction and Maintenance.

Tuesday, May 5

Morning Session

Joint session with Natural Gas Section at Hotel Roosevelt.

Afternoon Session

Luncheon Conference on Work on Consumers' Premises—Presiding: H. L. Nicolson, chairman, Sub-committee on Work on Consumers' Premises.

Report of Sub-committee on Work on Consumers' Premises.

Wednesday, May 6

Morning Session

Street Tools and Methods Devised to Facilitate Maintenance Work in the Distribution System—F. A. Engel, superintendent of distribution, Elizabethtown (N. J.) Consolidated Gas Co.

Construction of 1000-lb. Natural Gas Line Across Lake Pontchartrain — with Motion Pictures — Through E. R. Cunningham, general superintendent, main pipe lines, United Gas Pipe Line Co., Shreveport, La.

Reconditioning of High Pressure Steel Mains in Detroit—with Motion Pictures—R. B. Allen, assistant superintendent of street department, Michigan Consolidated Gas Co., Detroit.

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S. C. M. A. Holds Meeting

The Southern California Meter Association held a dinner meeting at the French Cafe, Montebello, Calif., on March 19. Don Knox, of National Supply Co., headquarters at Toledo, Ohio, addressed the group on "Progressive Gas Lift."

Appalachian Short Course 1942 Meeting Date Deferred

AT a meeting of the general committee of the Appalachian Gas Measurement Short Course held recently at West Virginia University and presided over by J. E. Overbeck, of the Columbia Engineering Corp., Columbus, Ohio, chairman, the subject of the 1942 school was discussed. It was generally agreed that the pressure of war materials business, personnel shortages and other factors would tend to limit general participation in a school this year and the committee defer action on the selection of a date for a school for this year, pending future developments.

The following have been appointed to subcommittee chairmanships for the next meeting of the school:

Program committee, Joseph M. Low, chairman, Hope Natural Gas Co., Clarksburg, W. Va.; banquet and entertainment committee, A. D. MacLean, chairman, Pittsburgh Equitable Meter Co., Pittsburgh, Pa.; housing and registration committee, W. A. Staab, chairman, West Virginia University, Morgantown, W. Va.; exhibits committee, J. W. Allison, chairman, Monongahela West Penn Public Service Co., Morgantown, W. Va.; publicity committee, R. S. Reed, Jr., chairman, Pittsburgh Equitable Meter Co., Pittsburgh, Pa.; educational committee, H. J. Wagner, chairman, West Virginia Public Service Commission, Charleston, W. Va.; publications and merit awards committee, C. R. Spindler, chairman, West Virginia University, Morgantown, W. Va.; practical methods committee, Report No. 3, C. B. Heist, chairman, Manufacturers Light & Heat Co., Pittsburgh, Pa.; general committee, J. E. Overbeck, chairman, Columbia Engineering Corp., Columbus, Ohio; executive committee, G. R. Spindler, chairman, West Virginia University.

■ ■

Midwest Industrial Gas Council Elects Officers

James E. Dare, Public Service Co. of Northern Illinois, Streator, Ill., was elected 1942 chairman of the Midwest Industrial Gas Sales Council of the American Gas Association Industrial and Commercial Gas Section at a meeting of the council held in Chicago, Ill., March 20. He was nominated to succeed George L. Allard, outgoing 1941 chairman.

Mr. Dare is actively associated with the industrial phase of the gas industry and is an enthusiastic participant in A. G. A. Industrial and Commercial Gas Section committee work. He is currently chairman of the Section's Industrial Space Heating Committee.

Chosen as Mr. Dare's co-workers on the Council were R. H. Lind, Iowa-Illinois Gas & Electric Co., Davenport, Iowa, vice chairman, and Paul F. Gibson, Western United Gas & Electric Co., Aurora, Ill., secretary-treasurer.

■ ■

Florida-Georgia Gas Meters Conference Set for April 18

H. Stuart Johnston, secretary-treasurer of the Gas Meters Association of Florida-Georgia, has announced that the meeting which was previously scheduled to be held in Savannah, Ga., April 19-21 has been cancelled due to general conditions. The board of directors of the asociation have decided to hold a one-day conference in a more central location for the purpose of committee reports, appointment of new committees and installation of new officers and directors. This meeting will be held in Jacksonville, Fla., April 18.

Gas Measurement Course is April 21-23

PROBLEMS facing the gas industry due to the war will be included in papers and discussions presented at the 18th Annual Southwestern Gas Measurement Short Course to be held at the University of Oklahoma, Norman, Okla., April 21-23.

The program, arranged at a committee meeting on March 2, held in Tulsa, Okla., called by Max K. Watson, Canadian River Gas Co., Amarillo, Texas, program chairman, will include a number of prominent speakers before the general assemblies to be held each forenoon. Among these speakers will be Burt R. Bay, president, Northern Natural Gas Co., and Judge Reford Bond, chairman, Oklahoma Corporation Commission.

Topics of interest to gas company executives and employees will be presented at the morning sessions. The afternoons have been set aside for 48 classes in which papers and discussions will center about various phases of gas measurement work, including proper maintenance and repair of gas measurement and regulating equipment.

The afternoon classes will be in charge of experienced instructors who will allow ample time for discussion. C. E. Terrell, Southern Natural Gas Co., Birmingham, Ala., chairman of the exhibits committee, announced that 19 companies will have educational exhibits on display. Other committee chairmen are: G. W. McCullough, Phillips Petroleum Co., Bartlesville, Okla., general chairman; Dean W. H. Carson, College of Engineering, local arrangements and banquet; Miss Kate A. Niblack, secretary, Oklahoma Utilities Association, Oklahoma City, registration and publicity; E. C. McAninch, Oklahoma Natural Gas Co., Tulsa, practical methods; and Earl Kightlinger, Arkansas-Louisiana Gas Co., Shreveport, La., publication.

Members of the general committee not pictured on this page are: C. A. Gibson, Cities Service Gas Co., Bartlesville, Okla.; E. M. Myers, Corporation Commission of Oklahoma, Oklahoma City; Dr. F. V. L. Patten, Railroad Commission of Texas, Austin; E. H. Poe, Natural Gas Section, A. G. A., New York City; J. H. Satterwhite, American Meter Co., Tulsa, Okla.; R. J. Sullivan, Humble Oil & Refining Co.; and W. H. Woods, Gulf Oil Corp., both of Houston, Texas.

The short course is sponsored each year by the College of Engineering, University of Oklahoma, assisted by the corporation commissions of Oklahoma and Kansas, the Texas Railroad Commission, the Oklahoma Utilities Association, the Natural Gas Section, A. G. A., and the Natural Gasoline Association of America. Attendance has grown steadily throughout the years.

■ ■

Pennsylvania Gas Men Hold Forum on War Regulations

Highlight of the March dinner meeting of the Pennsylvania Natural Gas Men's Association, held at the Pittsburgh Athletic Association, Oakland, Pittsburgh, Pa., on March 24, was an open forum on "Problems Arising in the Natural Gas Industry Under the War Production Board Regulations."

The discussion was led by James L. White, attorney for The Peoples Natural Gas Co., Pittsburgh. Particular regulations considered were L 31, M 68, M 67, and P 46. The basic priorities regulation No. 1, and the new P. D. 1A application form, were also discussed. B. H. Smyers, Jr., secretary of the association, notified members of the meeting and suggested that they bring copies of the regulations for reference purposes.

Members General Committee, 1942 Southwestern Gas Measurement Short Course. Left to right, seated: E. L. Stark, Earl Kightlinger, J. H. Page, Max K. Watson, G. W. McCullough, W. H. Carson, Kate A. Niblack, E. C. McAninch, R. M. Scofield. Standing: R. L. Rountree, J. L. Griffith, W. R. McLaughlin, W. F. Lowe and L. G. Rheinberger.

Indiana Gas Association to Feature War Program Study

"WHAT we can do for the war program" will share attention with "What's the war program doing to us?" as subject matter for the annual meeting of the Indiana Gas Association in Indianapolis, May 11-12. Gov. Henry F. Schricker, who is active in the direction of Indiana's civilian defense, and Clarence Jackson, director of the State Chamber of Commerce and the State Council for Defense, will have prominent spots on the program, along with Emmett Cox, of the Indiana Inspection Bureau, who will discuss "Protection of Industry During War Times."

President F. B. Culley, of Evansville, will introduce a number of speakers who will cover the war effort as applied in the gas industry. "War-time Appliance Servicing" will be the subject of a symposium, and L. A. Kirch, of Indianapolis, will speak on "Substitute Gases." War and Post-war Problems will be discussed by Deans A. A. Potter and J. E. McCarthy, of Purdue and Notre Dame Universities, respectively. Louis Ruthenburg, president, Servel, Inc., will cover relationships between the manufacturers, the utilities and the public in these trying times, and William Rowland Allen, of Indianapolis, will speak on war-time personnel questions.

■ ■

Mid-West Gas Meeting Set For April 13 in Sioux City

The Mid-West Gas Association Annual Meeting will be held at Sioux City, Iowa, at the Hotel Martin on April 13. According to H. E. Peckham, president of the association, the advance program is now completed and will be as follows:

Address of Welcome—George A. Neal, Sioux City, Iowa, president, Iowa Public Service and Sioux City Gas & Electric companies.

President's Message—Harold E. Peckham, Northern States Power Co., St. Paul, Minn.

Business meeting, including reports and election of officers.

Message from the American Gas Association.

AGAEM in the National Emergency—Watson E. Derwent, vice president, Geo. D. Roper Corp., Rockford, Ill., and president, AGAEM.

Sales Problems Created by the National Emergency—C. A. Nash, sales promotion manager, United Light & Power Service Co., Davenport, Iowa.

Problems Concerning General Operations of Gas Utilities in the National Emergency—Harry K. Wrench, president, Minneapolis (Minn.) Gas Light Co.

The program will be followed by a banquet in the evening.

■ ■

C. N. G. A. Monthly Meeting Is Held in Los Angeles

The California Natural Gasoline Association met at the Mary Louise Tea Room, Los Angeles, on the evening of March 5 for a dinner meeting and later adjourned to the Barker Bros. building of that city to hold their regular monthly meeting.

Ira C. Bechtold, process engineer, The Fluor Corp., Ltd., Los Angeles, delivered a paper on "Hydrocarbon Hydrates" in which he discussed the fundamental chemical and physical aspects of hydrate formation and methods for control of hydrate formation in field equipment.

Among those in attendance at the Oklahoma Utilities Association meeting which convened at the Biltmore Hotel, Oklahoma City, March 23-24, were (left to right): Leonard Crump, Oklahoma Natural Gas Co.; Lewis A. Robertson, Zenith Gas System, Inc.; E. M. Myers, Oklahoma Corporation Commission; A. F. Potter, Gas Service Co., and director, OUA; Charles T. Evans, Little Rock, Ark., speaker, OUA banquet; Frank B. Long, vice president, Oklahoma Natural Gas Co., and director, OUA; C. A. Breitung, Southwest Gas Utilities Corp.; Paul K. Stickelber, Oklahoma Natural Gas Co.; and W. L. Woodward, president, Oklahoma Utilities Association.

War Trends Temper Oklahoma Meeting

By O. D. HALL

COMPLETE determination of the gas and electric industries to adjust all their efforts toward winning the war was expressed by speakers before the 24th Annual Convention of the Oklahoma Utilities Association at the Biltmore Hotel, Oklahoma City, March 23-24.

Prediction that tire rationing will reduce travel to distant points and improve attendance at local conventions was made by W. L. Woodward, Alva, Okla., Association president. Gas and electric utilities were counseled to unite on uniform rules and regulations, as affecting customers, in order to lessen confusion and misunderstanding, in an address by Elmer T. Petersen, Oklahoma City, editorial writer of the *Daily Oklahoman* and *Times* newspapers of that city.

E. H. Poe, American Gas Association, New York, declared that disturbing economic theories have been put into practice by law and some individual and group freedoms have been unduly restricted by law. He expressed pride, however, in the way public utilities are buckling down 24 hours of each day to help win the war.

R. W. T. Purchas, Middle West Service Co., Chicago, Ill., used illuminated slides to illustrate supply trends and the increasing costs of goods and materials since 1940.

Some difficulties State industrialists are experiencing in securing war contracts, and limitation imposed on normal expansion by State laws, were outlined by E. J. O'Conner, Associated Industries of Oklahoma, Oklahoma City.

D. I. Johnston, Oklahoma City attorney, declared that recent federal antitrust prosecutions had reduced the efficiency of several vital war production industries from 15% to 30%.

A panel discussion on operating matters was conducted by Frank J. Meyer, Oklahoma Gas & Electric Co. This meeting developed that rationing of electricity may eventually come to the Southwest and that the Federal Power Commission is now cooperating with electric utilities in making surveys of the available electricity in the Texas area. A similar panel, led by Oakah Jones, Oklahoma Natural Gas Co., Tulsa, dealt with accounting, financial and tax matters.

Major I. O. Hagen, Oklahoma selective service headquarters, advised utility executives to make a survey of their man power under 45 years of age and report on such men as are absolutely indispensable in the organization, as the men receive notice of changes in their classifications.

Principal speaker at the annual dinner was Charles T. Evans, Arkansas Power & Light Co., Little Rock, Ark. He urged return to fundamental Americanism, to religion and sound economics.

E. C. McAninch, Oklahoma Natural Gas Co., Tulsa, outlined the program for the 18th Annual Gas Measurement Short Course to be held at the University of Oklahoma, Norman, April 21-23, inclusive.

F. J. Meyer, Oklahoma City, was elected chairman of the electric division and R. W. Ducker, Tulsa, was named chairman of the gas division.

War Topics Highlight Wisconsin Meeting

FEATURED topics at the Wisconsin Utilities Association Gas Section Convention held at the Schroeder Hotel, Milwaukee, Wis., March 16-17, were: How the gas industry can gird itself to more effective contributions to help win the war; how it should prepare for a changeover to natural gas; what companies should do to streamline their operations to fit into the new war economy, and what steps they should take to preserve their markets.

Albert Smith, district manager, Northern States Power Co., Chippewa Falls, was elected chairman of the commercial division, and E. C. Hemes, Milwaukee Gas Light Co., was elected chairman of the technical division. Carl A. Altenbern, general manager, Wisconsin Southern Gas Co., Burlington, was elected vice chairman of the technical division, and B. T. Franck, vice president, Milwaukee Gas Light Co., was elected vice chairman of the commercial division.

The opening address, entitled "Utility Service in War Times," was delivered by L. F. Seybold, president, Wisconsin Utilities Association. Mr. Seybold's address was followed by "Some National Observations' which was written by George S. Hawley, president, American Gas Association, and delivered by E. H. Poe, secretary, Natural Gas Section, A. G. A. R. W. Peterson, chairman, Public Service Commission of Wisconsin, discussed "Wisconsin's Critical Gas Problems," and Watson E. Derwent, president, Association of Gas Appliance and Equipment Manufacturers, spoke on "The Viewpoint of Manufacturers on Ability to Supply Equipment and Appliances." Abstracts of some of the papers presented at this convention will appear in the "Abstracts" department of a future issue of *GAS*.

A total of 320 delegates registered at the recent convention, exceeding the 1941 total by 25. Great interest was shown in the eight round-table sessions which concluded the meeting.

A.G.A. Industrial and Commercial Gas Conference

MORE than 250 industrial and commercial delegates from gas utility and equipment companies from 26 states and Canada attended the A.G.A. Industrial and Commercial Gas Conference, held March 12-13 at the Hotel William Penn, Pittsburgh, Pa. Throughout the conference, the papers, attendance, executive interest and cooperation from those outside the industry emphasized the significance of the part played by industrial and commercial gas in war production.

There was a serious note to the whole conference which was reflected by each speaker as point after point was brought out showing how industrial and commercial gas and equipment can be utilized to increase war production.

George F. B. Owens, assistant vice president, The Brooklyn (N.Y.) Union Gas Co., and chairman of the Industrial and Commercial Gas Section, called the Thursday morning session to order, and Edward M. Borger, president, The Peoples Natural Gas Co., Pittsburgh, Pa., led off the 31 speakers who participated in the conference and sounded the keynote with an address on "Industrial and Commercial Gas Engineers — Their Vital Role in the War Effort."

Two highlights of the conference were the Commercial and Industrial Forums. Ben H. Gardner, vice president, Columbia Engineering Corp., Columbus, Ohio, and vice chairman, Industrial and Commercial Gas Section, presided at the Commercial Session Forum, and Carroll B. Mershon, The Manufacturers Light & Heat Co., Pittsburgh, Pa., presided at the Industrial Session Forum.

At the Commercial Session Forum, F. Russell Howe, Rochester (N. Y.) Gas & Electric Corp., delivered the initial address, "Gas Food Service Equipment—Sales and Service Under Present Conditions." In answer to the question, "What Is Our Most Acute Commercial Gas Problem," asked of commercial gas managers, J. R. Delaney, The Cincinnati (Ohio) Gas & Electric Co., and Harry M. Woolman, Jr., Jersey Central Power & Light Co., Asbury Park, N. J., felt that their most acute problem was in the service field. After this session, a Deep Fat Frying Forum was participated in by the following: Raymond Little, Equitable Gas Co., Pittsburgh, Pa.; Samuel E. Tappan, J. C. Pitman & Sons, Inc., Lynn, Mass.; Ray Trowbridge, Seattle (Wash.) Gas Co., and others.

The Industrial Forum was opened by Prof. W. Trinks, Carnegie Institute of Technology, who spoke on the topic, "Gas in the All-Out Industrial Effort." The forum continued with a discussion sponsored by the Metal Treating and Melting Committee, Robert C. LeMay, The Connecticut Light & Power Co., Waterbury, Conn., chairman. A later forum on New and Improved Industrial Heating and Processes and Equipment, led by Lawrence E. Biemiller, Consolidated Gas, Electric Light & Power Co. of Baltimore (Md.), brought forth comments by F. S. Bloom, president, Bloom Engineering Co; James Kniveton, The Selas Co., Philadelphia, Pa., and Prof. W. Trinks on the problems of making gas do double duty in all war production plants.

In the WAR PRODUCTION PROGRAM

It's SPEED and DEPENDABILITY that Count Most . . .

that's Why "CLEVELANDS" Are Indicated for the Trenching Jobs

Clevelands are "in the thick of it" digging trench on various U. S. Government projects and working on many utility pipe-line jobs necessary to supply the 1000s of cu. feet of gas required in our "all out for victory" program.

Compact, fast, flexible and mobile Clevelands are easy to operate. Rugged and amply powered for the toughest tasks, they are delivering maximum footage day in and day out, on every job and reducing to a minimum service interruptions.

Illustration at the left shows the famous "BABY DIGGER"—CLEVELAND MODEL 95—the pioneer small trencher, known and used throughout the gas industry. Its wide range of cutting widths and all-around value have made the "MODEL 95" supreme as a general purpose gas company trencher.

THE CLEVELAND TRENCHER CO.

"Pioneer of the Small Trencher"

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Illustration at the right is an important "Cleveland" feature. Truck speed transportation on special trailers. They load and unload in 10 to 15 minutes.

Awards Spark N. E. G. A. Conference

Officers of the New England Gas Association for 1942-43 elected at the 16th Annual Business Conference of that association held at the Hotel Statler, Boston, Mass., are as follows: First row, left to right: John West (president-elect), president, Worcester County Electric Co.; Charles G. Young (president), manager, Springfield Gas Light Co. Back row, left to right: Hall M. Henry (second vice president-elect), Negea Service Corp., Cambridge, Mass.; Earl H. Eacker (treasurer), assistant to president, Boston Consolidated Gas Co.; Clark Belden, executive secretary and clerk. Norman B. Bertolette, of the Hartford Gas Co., was elected first vice president.

THE New England Gas Association's 16th Annual Business Conference, which was held at the Hotel Statler, Boston, Mass., March 19-20, got off to a lively start with the presentation of Sales Contest Awards. The 63 entries set a new record for contestants which dates to 1925, the year the contest began. Hall M. Henry, incoming second vice president of the Negea Service Corp., Cambridge, Mass., issued the awards.

The following companies achieved the best New England record of any company, regardless of size, for the following appliance sales:

Ranges—Springfield Division of the Vermont Lighting Corp.

Automatic Water Heaters—Springfield Division of the Vermont Lighting Corp.

Refrigerators — Fall River Gas Works Co.

Kitchen Heating—Marlborough-Hudson Gas Co.

Space Heating—Framington Division of the Worcester Gas Light Co.

After this award presentation, officers and directors were elected as follows: John West, Worcester County Electric Co., president; Norman B. Bertolette, The Hartford Gas Co., first vice president; Hall M. Henry, Negea Service Corp., second vice president; Earl H. Eacker, Boston Consolidated Gas Co., treasurer; and Clark Belden, executive secretary, the New England Gas Association, clerk.

The following directors-at-large were appointed:

Rollin Buckminister, Blackstone Valley Gas & Electric Co., Pawtucket, R. I.; James A. Cook, Lynn (Mass.) Gas & Electric Co.; Ralph E. Daniels, Eastern Appliance Co., Boston; E. M. Farnsworth, Boston Consolidated Gas Co.; Edwin L. Hall, Manchester Gas Co.; L. E. Knowlton, Providence (R. I.) Gas Co.; A. V. S. Lindsley, The Connecticut Light & Power Co., Waterbury; Irwin L. Moore, New Fngland Power Association, Boston; W. F. Norton, Public Service Co. of New Hampshire, Nashua; R. E. Ramsay, New Haven (Conn.) Gas Light Co.; P. J. Rempe, Stone & Webster Service Corp., Boston; David S. Revnolds, Boston Consolidated Gas Co.; Edward G. Twohey, Northampton Gas Light Co.; and G. D. Yeaton, Harwick Stove Co., Boston.

In the Division Best Paper Awards Contest the following papers were selected as most valuable:

Accounting Division: "What I Expect of the Accounting Department"—Hall M. Henry, Negea Service Corp., Cambridge, Mass.

Industrial Division: "Sales Planning in This Defense Era"—John J. Quinn, Boston (Mass.) Consolidated Gas Co.

Operating Division: "Some New Facts on Liquid Phase Gum"—Dr. T. A. Mighill, Blackstone Valley Gas & Electric Co., Pawtucket, R. I.

Sales Division: "There's Magic in Modern Cookery"—E. C. Sorby, Geo. D. Roper Corp., Rockford, Ill.

This award presentation was followed by an address, "The Association's Year," which was delivered by Clark Belden, executive secretary, The New England Gas Association. Mr. Belden's speech was followed by the address of Charles G. Young, outgoing president, The New England Gas Association, and manager, Springfield (Mass.) Gas Light Co.

The conference program, as announced in the March issue of *GAS*, page 43, followed Mr. Young's speech.

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Pacific Lighting Corp. Adds 58,000 Meters During 1941

With 1,027,060 gas meters in service at the end of 1941, the system of Pacific Lighting Corp., San Francisco, Calif., ranks as the third largest in the United States, the company's annual report to stockholders covering operations for 1941 revealed. The gain in active meters for the year was 58,000, or 6%, as compared with an increase of 48,000, or 5%, during 1940.

The preliminary earnings statement showed a net income of $7,727,859 for 1941, an increase of $347,800 over the previous year. Gross operating revenue for last year amounted to $48,681,962, an increase of $3,452,206 over the previous year.

ABSTRACTS

• ABSTRACTS of papers presented before the Pacific Coast Gas Association's 48th Annual Convention, Del Monte, Calif.

State Regulation of Gas Holders in California—Arthur B. Allyne, associate engineer, California Railroad Commission, San Francisco, Calif. The results of the first year's operation of all gas holders under General Order No. 94 of the California Railroad Commission are presented and discussed. There are 315 gas holders and hydrocarbon vessels in operation in California and their distribution among utilities and their operating capacities and costs are presented. (*GAS*, Sept., 1941, pg. 32.)

A Simplified Means of Purging Small High Pressure Holders—K. B. Anderson, superintendent Gas Department Coast Counties Gas and Electric Co., Santa Cruz, Calif. In meeting the inspection requirements of the Railroad Commission's General Order No. 94, ten high-pressure natural gas holders were inspected at Santa Cruz, Watsonville and Hollister. The simplified purging equipment used in taking these holders out and returning them to service is described and illustrated. (*GAS*, Oct., 1941, pg. 43.)

Special Equipment for Inspection and Purging of Gas Holders—Byron Millner, Pacific Gas and Electric Co., San Francisco, Calif. The equipment necessary for the inspection and purging of gas holders and hydrocarbon vessels is described and illustrated. Due to the large number of gas holders and hydrocarbon vessels on the Pacific Gas and Electric Co.'s system, the expenditure of $10,000 for purging equipment as well as other apparatus necessary for inspections appeared justifiable. (*GAS*, Oct., 1941, pg. 41.)

A Gas Holder Purging Apparatus—Harry J. Keeling, Southern Counties Gas Co., Los Angeles, Calif. This paper describes the design and operation of a portable ap-

GAS in this department each month presents reviews of technical magazine articles, new books, and individual reports presented before the association meetings of the gas and allied industries.

To do this, more than 70 periodicals serving the gas, oil, and affiliated industries are read each month by a competent editorial staff. In addition, the technical editor of GAS combs the individual reports given before association meetings for worthy material to be presented in this department.

Abstracts of gas industry association papers are published to save the reader's time, to furnish him with capsule information on contributions to gas association programs. The publishers of GAS will gladly forward requests for further information to authors of papers abstracted in this department.

The value of this department is amply demonstrated by the action of one of our technical readers. He has subscribed to an extra copy of GAS in order to cut out these items and paste them on 3x5 file cards for ready future reference.

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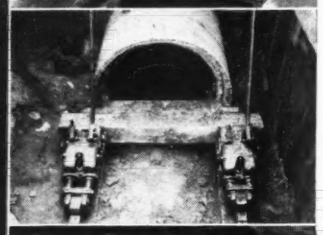

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paratus which generates an inert gas mixture for purging gas holders. The equipment comprises a gas-fired, water-cooled combustion chamber mounted on a trailer. The apparatus delivers 48,000 cubic feet of inert gas per hour at a pressure of about one pound per sq. in. A rotary compressor on the trailer driven by a gas engine provides all the air required for combustion and also is the source of positive pressure for the inert gases. Data showing the cost of constructing the apparatus is included in the report. (*GAS*, Oct., 1941, pg. 39.)

The Dewatering, Inspection and Repair of a Two Million Foot Holder—M. R. Thompson, Southern Counties Gas Co., Los Angeles, Calif. In the case described in this paper, experience indicated that external inspection alone was not sufficient to detect serious deterioration of certain inaccessible vital parts of a two million cu. ft. water seal gas holder and that serious damage to the structure might have resulted from failure of the affected parts to function properly. The paper describes the deterioration that was discovered and how it affected the operation of the holder, the repairs and replacements that were made and suggests how similar trouble can be avoided by eliminating from the structural design certain weaknesses. It also stresses the importance of careful inspection at time of erection. (*GAS*, Sept., 1941, pg. 34.)

Results of One Hundred Holder Inspections—Hughes Sneed, consulting engineer, Oakland, Calif. The writer sets forth some of the more common findings encountered in inspecting numerous low and high pressure gas holders operated by public utilities in California. The need for continued maintenance work throughout the life of holder equipment is stressed. When signs of corrosion are encountered it is necessary to determine if this is proceeding under present conditions or if it took place some time in the past. In the case of low pressure holders, faulty conditions of the tanks, guide frames, crowns, and carriages are discussed and in certain cases remedies suggested. (*GAS*, Sept., 1941, pg. 36.)

Combustible Gas Mixtures in Pipe Lines—Elting Henderson, Southern California Gas Co. Explosions in pipe lines containing mixtures of hydrocarbon vapors and air, of sufficient violence to rupture and lift the lines from beneath the ground, have been known to occur. The violence of such explosions is surprising, since, from theoretical calculations, assuming the gas to burn as in a small vessel, only comparatively low pressures of one or two hundred pounds per square inch would be developed. A review of the literature reveals that most air-natural gas explosions have been carried out in small vessels wherein also only low pressures were observed. From the few explosions made in small tubes and larger pipes, there is an indication that more violent explosions could be expected under flow conditions with long lengths of pipe of large diameter containing restrictions.

Therefore, in view of the apparent need for a better knowledge of explosions in pipe lines, experiments were made to study the effect of all possible variables which might exist in the field. Such variables as length of pipe, pipe diameter, point of ignition, restrictions in pipe line, composition of gas-air mixture, gas velocity, initial pressure and temperature of air-gas mixture were studied.

In order to prevent the formation of an explosive mixture when purging natural gas with air or air with natural gas from a pipe line, an investigation was made of the use

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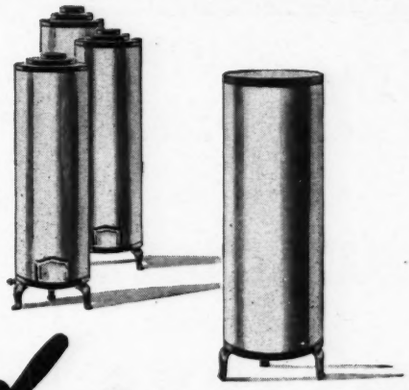

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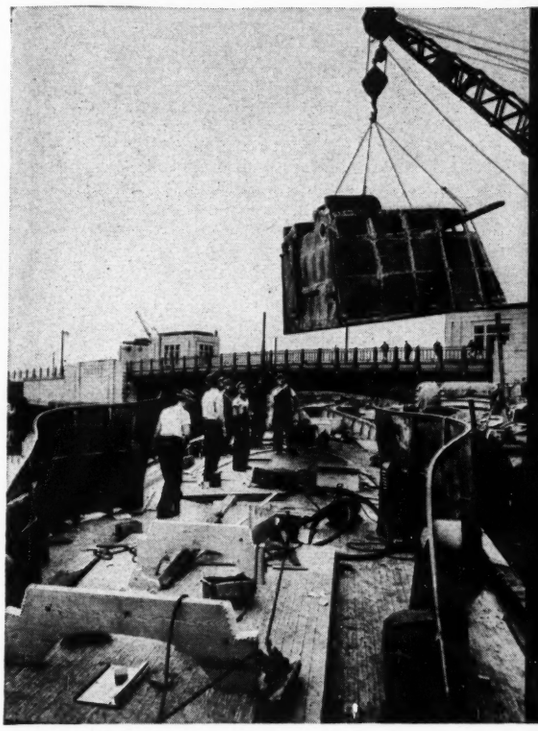

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of a partition or "slug" of inert gas, such as nitrogen, carbon dioxide, or exhaust gas, between the air and the gas. The quantity of inert gas required was determined for such variables as length of pipe, pipe diameter, velocity and pressure of gas in the pipe, and type of inert gas (*GAS*, Sept., 1941, p. 23).

• ABSTRACTS which are listed below are of papers presented at various recent association meetings. Further information on topics covered may be obtained by addressing GAS.

How Can the Gas Industry Contribute Most Effectively Toward Winning the War Through the Medium of Conserving Materials — Albert S. Johnson, president, Southern Union Gas System, Dallas, Texas. First duty of the industry is obviously to conserve materials by eliminating all waste and by so arranging business programs as to require a minimum of additional materials. However, curtailment of operations should not go beyond the maintenance of properties and consumers' appliances in safe and efficient working conditions. Advertising programs should be maintained, not only to tell the people of the essential part the gas industry plays in their lives, but also to support the newspapers by offsetting their decreasing revenue. Failure, in the trying period, could well be the beginning of the end of private ownership of utilities, whereas a successful continuation of operation will win the respect and support of the public. Presented at the Southern Gas Association Convention, Atlanta, Ga., February 9-10, 1942.

The Flexibility of a Small Water Gas Set—Joseph M. Duffy, gas superintendent, Nantucket Gas and Electric Co., Nantucket, Mass. Discusses operations with a wide variety and combination of raw gas-making materials, including coal, coke, sun No. 11 oil (a heavy gas oil of 18° A. P. I.) and No. 2 furnace oil, with the conclusion that "it is apparent that almost any combination of generally accepted fuels can be used successfully without a very large change in the overall heat efficiency of the plant." Quality of the gas and performance and maintenance of the plant is also only slightly affected by wide changes in raw materials. Presented at the New England Gas Association Meeting, Hotel Bradford, Boston, Mass., Jan., 1942.

Experiences With and the Effect of the Use of Scrapers on Internal Corrosion of Gasoline Pipe Lines — D. E. Sullivan. The original capacity of a gasoline pipe line can be restored or maintained from the beginning of its operation, if scrapers of the "wire brush and rubber squeege" type are run through the line at uniform intervals of every three or four days. Whether this process increases the rate of interior corrosion by constantly exposing fresh surfaces to new attacks, or whether persistent and frequent removal of water by the scraper, causes abatement of the corrosion rate has not been proved.—Division of Production, 22nd Annual Meeting of American Petroleum Institute, San Francisco, Calif., Nov., 1941.

Some Problems in the Field of Gas Heating—G. T. Donceel, industrial engineer, Oklahoma Natural Gas Co., Oklahoma City, Okla. Natural gas combustion problems are discussed. In the newer type residential heating units of warm air furnace design, such as are installed in homes without a basement and are set at floor level in some small room or closet selected for the purpose, certain misapplications of the return air to the furnace has been found because essentially, the room containing the furnace has been used as a phenum chamber for the return air. This results in a hazardous condition with the possibility of very serious consequences as a result of partially burned gases being carried into the house through the duct system. Corrections are suggested for this and other relative problems.—Oklahoma Chapter, American Society of Heating and Ventilating Engineers, Oklahoma City, Okla., Jan., 1942.

Current Periodicals

Expansion of Pipe Lines is Vital to War Program — Paul Reed. *Oil and Gas Journal*, Jan. 29, 1942, p. 88. American industry and governing bodies discovered in 1941 the necessity for vast pipe-line expansion for safe and adequate transportation for supplies required for maintaining the activities of the nation's war program. For the first time large systems have been built to displace tanker shipments. Refined products lines have been increased one-third because of their efficiency. New natural-gas lines are needed to serve industrial centers. These increases in pipe-line construction have been accomplished in spite of unusual obstacles.

Francitas Gas Company's Cycling Plant, Jackson County, Texas, Extracts Condensate at High Pressures — F. H. Love. *Petroleum Engineer*, Jan., 1942, pp. 72, etc. Liquid products recovered from gas phase by multiple-stage "concurrent" absorption method; Wellhead pressure of 2800 lbs. per sq. in. reduced at plant to 2000 lbs.; gas returned to sand at 2920 lbs. pressure.

Reserve Estimates Provide Important Danger Signals — W. V. Howard. *Oil and Gas Journal*, Jan. 1, 1942, pp. 18, etc. In this article, the third of a series on reserves and discovery rates, the author appraises the frequently suggested method of allocating reserves to the year of discovery of the field. Despite a great many difficulties inherent in the method, it is pointed out that it does furnish a danger signal by means of which we can be warned whenever the discovery rate falls near or below the limit of safety.

Plow-Type Equipment Useful in Pipe-Line Construction—Paul Reed. *Oil and Gas Journal*, Jan. 29, 1942, pp. 191, 192. The possibilities of plow-type equipment are being tested as a result of development work carried on by pipe-line construction men as well as by organizations of other industries. Although the use of these implements is still in the experimental stage, certain types have already demonstrated their value. Illustrated.

Design and Performance of a Direct-Fired Unit Heater—R. M. Rush and H. A. Pietsch. *Heating, Piping and Air Conditioning*, Jan., 1942, pp. 75-82. Development of direct-fired unit heaters for gas and oil fuel are traced and test data are given for units of a 1,000,000 B.t.u. capacity. Heat balance data are given for two tests. A novel method of measuring temperature gradient in industrial building is also described.

Transportation Has Fostered Southwest Oil Development—T. E. Swigart. *Oil Weekly*, Jan. 19, 1942, pp. 25-36. The place of pipe-line and water transportation in moving crude and refined petroleum and natural gas from Southwestern United States to the markets of the nation and the world are outlined in this paper. The material has been highly condensed from an address before the Houston Chapter of the A. P. I. on January 14, 1942. Original title was "The Place of Pipe Line Transportation in the Development of the Southwest."

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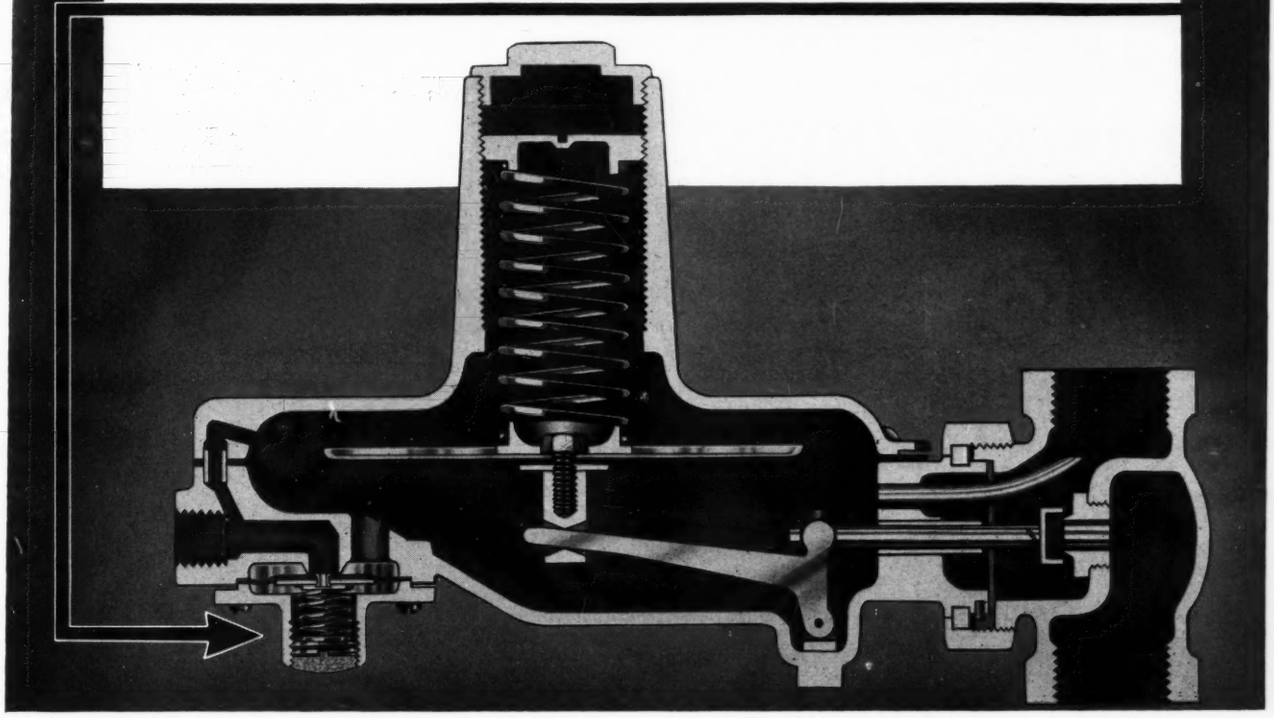

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United Gas Pipe Line Rate Schedule Denied by FPC

AN application by United Gas Pipe Line Co., Shreveport, La., requesting that its rate schedule providing for an increased rate in natural gas sold to Memphis (Tenn.) Natural Gas Co. be permitted to become effective as of August 1, 1940, instead of March 2, 1941, the date previously established by the Federal Power Commission as the effective date of the higher rate, was recently denied by the Commission.

The application contended that the agreement, a letter agreement between the two companies filed January 31, 1941, which increased the price of gas to reimburse Unied Gas Pipe Line Co. for payment of one-half of a ½¢ per M c. f. Louisiana Gas Gathering Tax, did not constitute a change of rate as defined in the Natural Gas Act, and that the Commission's failure to make the agreement effective as of August 1, 1940, resulted in United States penalized in the amount of $27,925.58 because of its claimed inability to consummate a written agreement until January 9, 1941.

■ ■

Wisconsin Utility Seeks Extension of Natural Gas Line

Wisconsin Southern Gas Co., a producer and distributor of manufactured gas in Racine and Walworth counties, Wis., has filed an application with the Federal Power Commission asking that the Natural Gas Pipe Line Co. of America be ordered to extend its lines to connect with a 3-in. line proposed for construction from Lake Geneva to Genoa City. The extension is asked to augment gas supplies to defense industries in Racine and Walworth counties.

An application already filed with the Commission by the Natural Gas Pipe Line Co. of America asks to furnish the needed supplies through an extension from a proposed line now under consideration. Wisconsin Southern Gas Co.'s action resulted from the belief that the additional supplies of gas are needed now and that the connection to the present system without waiting for proposed lines to be built is more advisable.

■ ■

FPC Publishes Order No. 91 on Amended Natural Gas Act

The Federal Power Commission published its Order No. 91, February 12. This order prescribes the rules and regulations governing applications by natural gas companies for certificates of public convenience and necessity covering the continuance of operation of those facilities in operation on February 7, 1942, the effective date of the recent amendment to Section 7 of the Natural Gas Act.

To obtain the benefit of the provisions of Section 7(c) as amended, applications under Order No. 91 must be filed before May 8, 1942.

• •

OPC Amends California Plan To Conserve Oil and Gas

The Office of Petroleum Coordinator has announced amendment of the California conservation plan to stop the production of oil or gas from wells in that state upon which materials have been installed or used in violation of Conservation Order M-68 of the War Production Board.

The action was taken at the specific request of the industry Production Committee for District 5 (Pacific Coast).

The amendment, to Coordinator's Recommendation No. 19, under which the California plan operates, grants specific authority to the Production Committee to refuse to establish allowables for wells upon which equipment has been installed illegally.

■ ■

Thirteen Fellows Selected To Study at Gas Institute

HAROLD VAGTBORG, director of the Institute of Gas Technology, Chicago, Ill., has just announced that 13 college senior students, picked in a nationwide selection, have accepted fellowships from the Institute of Gas Technology.

These 13, all of whom have or will graduate at the close of the current school year, represent 11 colleges and eight states from all parts of the nation. They will begin their work as fellows immediately upon graduation this spring, thereby starting the first summer of practical operating experience that is a required part of the Institute's curriculum. The fellows are:

Willard M. Dow, Edgewater, Colo.—Colorado School of Mines.
Roy Chester Feber, Lincoln, Neb.—University of Nebraska.
Alan E. Florin, Chicago, Ill.—Lawrence College.
W. Madden Gregory, Nashville, Tenn.—Vanderbilt University.
William R. Johnston, Denver, Colo.—University of Texas.
Richard A. Nevill, Dallas, Texas—Texas A. & I.
Thomas L. Pelican, Craig, Colo.—Colorado College.
Richard A. Rall, Cedar Rapids, Iowa—Coe College.
Leonard E. Savory, Denver, Colo.—University of Denver.
John W. Selph, Jr., Lawrenceburg, Tenn.—Vanderbilt University.
Frederick O. Sharp, Jr., Tulsa, Okla.—University of Tulsa.
Erwin R. Strong, Jr., Kingsville, Texas—Texas A. & I.
Raymond Wynkoop, Jenkintown, Pa.—Worcester Polytechnic Institute.

The 13 fellows were picked from a field of more than 150 candidates from 52 American colleges, universities and technical schools.

At the Institute of Gas Technology, these men will be trained specifically for the gas industry. Their fellowships will make available to them an annual stipend of $1000. Additional income will also be provided the fellows through their summer employment training. They will pursue a four-year graduate training program at the Institute which will lead to the doctorate upon completion.

■ ■

California Natural Gas Users Increase 100,000 in Year

California's natural gas companies added more than 100,000 household consumers to their customer list in the year ended November 30, 1941. The six companies doing 99% of the gas utility business of the state had 1,823,729 domestic users against 1,714,159 counted a year earlier by the A. G. A.

Impact of the new consumers on the gas lines was greater than the growth in numbers. While the number increased 6.4%, the amount of gas householders burned increased 17%. Consumers paid a total of $5,359,309 for household gas during November, or about 12.6¢ on the dollar more than they paid in November, 1940.

■ ■

Dallas Gas Co. Asks Permit To Transfer Franchise

Formal request for permit to transfer franchise to Lone Star Gas Co. has been filed with the city council, Dallas, Texas, by the Dallas Gas Co. If approved by the city council, the merger plan would require formal approval by the Federal Securities and Exchange Commission.

LITTLE HERE

Busy times ahead!
YOUR GAS RANGE WILL SEE ACTIVE DUTY ON THE HOME FRONT!
Here is a serious little woman . . . a determined little woman. She has studied the nutrition values of foods and knows how her gas range with modern cooking methods conserves healthful minerals and vitamins! She is cooking garden-fresh vegetables by "waterless" summer cooking and tenderizing meats with heat-controlled roasting.
She has her modern gas range on active duty in an all-out effort to utilize fully the nutritive, health-giving qualities of all food she cooks. Soon her gas range will be busier than ever with home canning and preserving. Your Gas Range, too, will need to carry on. Treat it with care. Keep it in good repair.
Gas Appliance Society of Northern California
Busy times ahead!
Canning, preserving, nutrition cooking will put your GAS RANGE on ACTIVE DUTY
Here is a kitchen scene that will be duplicated in thousands of California homes this Spring and Summer. This busy little woman has her Gas Range on active duty canning and preserving the fruits and berries and vegetables that are in seasonal abundance right now.
Is YOUR Gas Range ready for this extra cooking chore, too? Make sure it is getting the best of care. Make sure that it is in good repair. There are busy days ahead for you and your kitchen.
Gas Appliance Society of Northern California

BIG IN YOUR LOCAL NEWSPAPER

Two advertisements to be run in P. G. & E. territory during April. Both designed for present war conditions emphasizing the need for equipment that can "take it." Copy points out that with busy war days ahead, and a probable increase in canning and preserving . . . the homemaker will want to get the maximum of vitamins, minerals, flavor and texture from every pound of food she buys, and that to do this successfully, her kitchen range must be—if not new—at least in good repair. This, of course, is echoing the "nutritive cooking" idea which is being publicized nationally, and is "right down the alley" with most dealers.

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PEOPLE

D. A. Hulcy, president of the Lone Star Gas Co., Dallas, Texas, has been elected a member of the board of directors of Texas Defense Industries, Inc., a non-profit organization formed to survey possibilities of establishing a synthetic rubber industry in Texas and forward a prospectus on the situation to proper officials in Washington. The organization has said it will cooperate with Texas University in developing to commercial proportions the process developed by **Dr. E. P. Schoch** of the University for extracting liquid acetylene from natural gas, to be used as a base for synthetic rubber.

D. A. HULCY

• •

C. L. Brockschmidt, combustion engineer for the Mississippi River Fuel Corp., St. Louis, Mo., has been appointed special consultant on gas problems in the power division of the War Production Board, Washington, D. C. (see page 28). Mr. Brockschmidt, who assumed his new duties on March 12, will be concerned principally with the administration of Limitation Order L-31, which affects the distribution of natural and mixed natural and manufactured gas in 17 states and the District of Columbia (*GAS*, March, 1942, page 29). Prior to his affiliation with Mississippi River Fuel, Mr. Brockschmidt served the Lone Star Gas Co. as industrial gas sales engineer. He is a graduate of Texas A. and M. College (1926) in chemical engineering.

• •

Howard F. Reece has been appointed rate engineer for the Consumers Power Co., Jackson, Mich. Mr. Reece has been connected with Consumers Power and its affiliated companies for about 18 years. Mr. Reece worked 15 years in rate department activities.

• •

Charles B. Collard, assistant advertising manager of Laclede Gas Light Co., St. Louis, Mo., for the last five years, has been called to service in the United States Army. Mr. Collard, who joined Laclede following his graduation from the University of Missouri School of Journalism, will be succeeded by **Miss Helen J. Harney.**

• •

Paul B. McKee, president of Portland (Ore.) Gas & Coke Co., has been appointed to the advisory council of the Department of Commerce. The invitation to serve on the council was issued by **Jesse Jones,** secretary of commerce, who is ex-officio chairman of the group. Mr. McKee is the only Oregon member of the 60 members on the coast.

Arthur B. Allyne, gas engineer with the California Railroad Commission, San Francisco, Calif., has been ordered to report April 7 at Edgewood Arsenal, Md., for active duty in the U.S. Army as first lieutenant in the chemical warfare service. A graduate of California Institute of Technology, Pasadena, Calif., Mr. Allyne became affiliated with the Southern Counties Gas Co., Los Angeles, in 1926, rising to the position of chief chemist, which position he held until November of 1937, when he joined the forces of the California Commission. The author of many technical papers, particularly on pipe line corrosion, he was active for many years in the committee work of the Pacific Coast Gas Association, serving as general chairman of that Technical Section in 1938.

A. B. ALLYNE

• •

Joseph H. Lane was elected president of Cavalier Corp., Chattanooga, Tenn., at a recent meeting of that organization. **G. C. Raoul,** president of the company for many years, became chairman of the board of directors. Mr. Lane joined Cavalier Corp. as a salesman following his graduation from Dartmouth College in 1921. He became, successively, advertising manager, sales manager, and vice president. **Robert T. Frazier** is vice president in charge of sales and production for the appliance division. Mr. Frazier is president of the Institute of Cooking and Heating Appliance Manufacturers.

• •

Bert G. Williams, gas measurement engineer of Southern California Gas Co., Los Angeles, terminated a 30-year career in the gas business, March 1, 1942, going into retirement under the company's uniform pension plan. Born in Illinois and educated in Colorado, where he graduated from Colorado College in 1906, he spent several years in railroad engineering. He entered service of Southern California Gas Co. in 1911 and was responsible for gas measurement methods developed on that company's system over the years. Use of the orifice meter in gas measurement was begun locally under his supervision. He is a member of the Pacific Coast Gas Association, the Southern California Meter Association, and the Los Angeles and Beverly Hills Chamber of Commerce. Fellow engineers in the gas company recently honored Mr. Williams at a dinner.

B. G. WILLIAMS

• •

Earl Hobitzelle has been elected to the board of directors of the Republic Natural Gas Co., Dallas, Texas. Other directors elected were **W. J. Morris, F. M. Mayer** and **W. H. Wildes,** of Dallas, Texas; **R. O. Foulston** and **Ralph J. Pryor,** of Wichita, Kan., and **W. W. Turner,** Chicago, Ill.

• •

Frederick T. Colwell, editor of the American Gas Association Proceedings for the past six years, has joined the advertising and circulation department of Crowell-Collier's Publishing Co., New York, N. Y.

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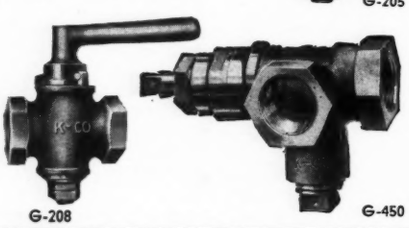

G-208 G-450

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A WAR MESSAGE
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Whatever race Wan is going to take the mightiest effort America has ever made—in men, materials, and money!
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Facing these facts, your Government needs, urgently, your cooperation with your employees in immediately enrolling them in
A PAY-ROLL SAVINGS PLAN
The voluntary Pay-Roll Savings Plan (approved by organized labor) provides for regular purchase by your employees of Defense Bonds through voluntary pay-roll allotments. All you do is hold the total funds authorized from pay-roll allotments in a separate account and deliver a Defense Bond to the employee each time his allotments accumulate to an amount sufficient to purchase a Bond.
You are under no obligation, other than your own interest in the future of your country, to install the Plan after you and your employees have given it consideration.
WHAT THE PAY-ROLL SAVINGS PLAN DOES
1. It provides immediate cash now to produce the finest, deadliest fighting equipment as Army and Navy ever needed to win.
2. It gives every American wage earner the opportunity for financial participation in National Defense.
3. By storing up wages, it will reduce the current demand for consumer goods while they are scarce, thus retarding inflation.
4. It reduces the percentage of Defense financing that must be placed with banks, thus putting our emergency financing on a sounder basis.
5. It builds a reserve buying power for the post-war purchase of civilian goods to keep our factories running after the war.
6. It helps your employees provide for their future.
To get full facts on installing the Pay-Roll Savings Plan, write TODAY to Treasury Department, Section B, 709 12th Street, NW., Washington, D. C.
U. S. Defense BONDS ★ STAMPS
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16—26190-1 GPO
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32,145 Firms With Over 17,700,000 Employees Have Installed the . . .

PAY-ROLL SAVINGS PLAN

Have YOU Started the Pay-Roll Savings Plan in YOUR Company?

Like a strong, healthy wind, the Pay-Roll Savings Plan is sweeping America! Already more than 32,000 firms, large and small, have adopted the Plan, with a total of over seventeen million employees—and the number is swelling hourly.

***But time is short!*. .More and more billions are needed, and needed fast, to help buy the guns, tanks, planes, and ships America's fighting forces *must* have. The best and quickest way to raise this money is by giving *every* American wage earner a chance to participate in the regular, systematic purchase of Defense Bonds. The Plan provides the one perfect means of sluicing a part of ALL America's income into the Defense Bond channel regularly every pay-day in an ever-rising flood.**

Do *your* part by installing the Pay-Roll Savings Plan *now*. For truly, in this war, this *people's* war, VICTORY BEGINS AT THE PAY WINDOW.

Plan Easy to Install

Like all efficient systems, the Pay-Roll Savings Plan is amazingly easy to install, whether your employees number three or ten thousand.

For full facts and samples of free literature, send the coupon below—today! Or write, Treasury Department, Section C, 709 Twelfth Street NW., Washington, D. C.

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MAKE EVERY PAY-DAY . . . BOND DAY!

U. S. Defense BONDS ★ STAMPS

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GPO 16—26944-1 Form No. DSS-280

NOW MORE THAN EVER BEFORE
GENERAL *all gas* CONTROLS
MEET DEFENSE HOUSING
SPECIFICATIONS 100%—*here's how!*

FIRST: because the low cost of General Controls automatic gas heating controls brings them within the most modest new or modernized home heating budget.

SECOND: because no electricity is needed and because their design reduces the amount of critical defense materials used, General all-gas controls make for easy and simplified installations that everyone can understand and enjoy. Write for details.

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Everything **YOU NEED FOR AUTOMATIC GAS HEAT IN A PACKAGE. This G. C. set includes new B-60 Series Gas Valve, pilot generator, new Trimtherm and 30 ft. of wire.**

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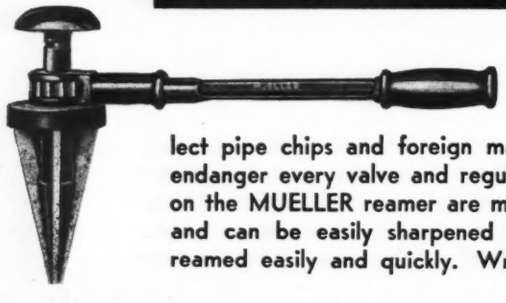
PIPE CHIPS DO CAUSE DAMAGE!



Unreamed pipe has burrs. These obstruct free flow, cut pipe capacity, and collect pipe chips and foreign matter which, when dislodged, endanger every valve and regulator on the line. The blades on the MUELLER reamer are made of high grade tool steel, and can be easily sharpened if necessary. Pipe ends are reamed easily and quickly. Write for descriptive literature.

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Guy W. Wadsworth, Jr., was elected vice president in charge of employee relations and **Frederick A. Hough,** executive engineer, was elected a director of Southern Counties Gas Co. of California at a meeting of the directors in March at Los Angeles.

G. W. WADSWORTH

F. A. HOUGH

Mr. Wadsworth has been identified with the gas industry in Southern California since 1921, when he was employed by the company in the field measurement department. He was secretary to the vice president and general manager for about five years, and in 1927 left the company's employ to become assistant financial adviser to the Republic of Haiti under the auspices of the American State Department. He returned to Los Angeles in 1930 to take up personnel work with the company, and in 1936 took over the personnel work of the former Los Angeles Gas & Electric Corp. In the spring of 1937 he became personnel manager of Southern California Gas Co. and last year was elected vice president in charge of employee relations for that concern (*GAS*, May, 1941, page 88). He will retain both positions.

Mr. Hough became associated with the Southern Counties Gas Co. in 1925 as a chemist and in 1928 was appointed research engineer. He became distribution engineer in 1931, which position he held until last December (*GAS*, January, 1941, page 46), when he was named executive engineer.

• •

L. J. ECK

Lester J. Eck, general superintendent of Minneapolis (Minn.) Gas Light Co., was named vice president and general superintendent at the annual meeting of the company's board of directors. Announcement of the appointment was made by **Harry K. Wrench,** president of the company. Mr. Eck has been a member of the company's engineering staff since 1924.

• •

Edward J. Devlin, research engineer for the Brooklyn (N. Y.) Union Gas Co., has been appointed chairman of the Manufactured Gas Committee of the Process Industries Division of the American Society of Mechanical Engineers. The committee plans to arrange for the presentation before the A. S. M. E. of papers dealing with technical and engineering aspects of the gas industry which are of general interest to engineers.

• •

Four members of the Taft, Calif., office of the Coast Counties Gas & Electric Co. were presented with service pins at the president's annual service pin dinner, held recently at the Hotel Taft. **A. R. Bailey,** of San Francisco, assistant to **H. L. Farrar,** president

of the company, and **A. E. Strong,** of Santa Cruz, general superintendent, made the presentations. **Miss Eva Brand, Dave Yearout** and **Herb Arndt** were presented with 10-year pins, and **Charles V. Cox** received a five-year pin. **Fred Hix,** manager of the local office of the company, acted as master of ceremonies.

• •

R. W. MILLER

Robert W. Miller, president of Pacific Lighting Corp., San Francisco, Calif., has been commissioned a Captain in the Army and assigned to the headquarters staff of **Major General R. G. Cousins,** commanding officer of the West Coast Air Corps Training Center.

Mr. Miller will be granted a leave of absence by the company under its policy of granting such leaves to all employees entering the armed forces. His duties will be assumed by his father, **C. O. G. Miller,** chairman of the board; **LeRoy M. Edwards,** vice president and general manager, Los Angeles, and **R. A. Hornby,** vice president, San Francisco. Mr. Miller will report for duty early in April.

• •

Frank M. Wilkes was elected president of the Southwestern Gas & Electric Co., Biloxi, Miss., at a recent meeting of the board of directors of the company. Mr. Wilkes succeeds the late **A. Lieberman. N. B. Heath,** vice president and manager of the Shreveport and Caddo division, was made executive vice president, and **Edwin Vennard,** of Kenilworth, Ill., was elected to the board of directors. Mr. Heath will continue his present duties as head of the Caddo and Shreveport divisions.

• •

Charles L. Saunders has resigned as resident vice president of Minneapolis-Honeywell Regulator Co. in charge of the Chicago district, to assume new duties as chief, instrument section, General Industrial Equipment Branch, War Production Board, Washington, D. C. Mr. Saunders has had long experience in the instrument industry. Prior to becoming manager of the Chicago branch of Minneapolis-Honeywell, he was branch manager of the Brown Instrument Co.

• •

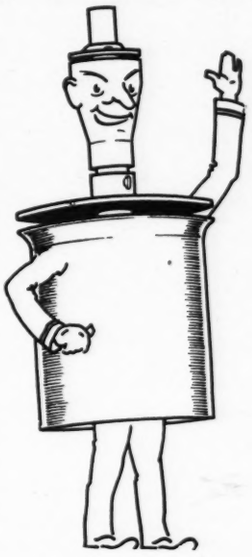
James F. Towers, of New York, has been elected president of Ford, Bacon & Davies, Inc., enginering firm which deals in pipe line construction and management. **William Von Phul,** former president, has been elected chairman of the executive committee of the company. The new president joined the company in 1918. From January to May, 1941, he served as assistant director of priorities of the Office of Production Management.

• •

The Youngstown Sheet & Tube Co., Youngstown, Ohio, has announced the appointment of **James E. Holmes** as assistant manager of tubular sales, with headquarters at Youngstown. Mr. Holmes was formerly associated with the Republic Steel Corp. in Cleveland.

• •

D. A. Sillers, Dallas, Texas, superintendent of Lone Star Gas Co.'s measurement department, has been appointed chairman of the gas measurement sub-committee, Production Division, American Petroleum Institute.



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SERIES "Y" BURNER—Register Type, combination oil or gas. Specially good where conservation of fuel is necessary, because it burns either or both gas and oil with the same heat pattern.

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NATIONWIDE SALES AND STOCKS

Lone Star System Reorganized

A REORGANIZATION of the Lone Star Gas system, which now consists of six operating companies, with headquarters in Dallas, Texas, into two Texas companies in order to effect economies and attain greater war-time efficiency, has been announced by D. A. Hulcy, president of the system.

After the plan, which is subject to the approval of the Securities and Exchange Commission at Washington, has been consummated there will remain only the Lone Star Gas Co. and the Lone Star Gasoline Co. The various distribution companies, The Dallas Gas Co., Community Natural Gas Co., and Texas Cities Gas Co., are to be dissolved, the Council Bluffs (Iowa) Gas Co. has been sold for $1,500,000, and the entire natural gas service business of the system, both the pipe line division and the distribution division, will operate as the Lone Star Gas Co. The main system operates in 290 towns in Texas and Southern Oklahoma.

The proposed plan, Mr. Hulcy said, will effect some economies, give a more compact operating organization, and result in two purely Texas companies without corporate connections outside of Texas and Oklahoma. It will be a simplified corporate structure, fully dedicated to meeting the exacting requirements of the times, and is a voluntary proposal by the company to effect these results, Mr. Hulcy stated.

In Dallas it will be necessary to secure approval of the City of Dallas for transfer of the franchise of The Dallas Gas Co. to the new corporation.

According to the application submitted to the Securities and Exchange Commission, "Lone Star Gas System has for many years efficiently operated its gas utility business and has established a highly satisfactory record for continuity of service. Under the proposed transaction there will be no change in facilities, operating personnel or the type of service rendered."

The present holding company, Lone Star Gas Corp., which owns practially all of the stock of the underlying subsidiary companies and has 15,000 stockholders, will be dissolved. Its stock will be exchanged for the stock of the new Lone Star Gas Co. of Texas on the basis of one share of the new company's stock for two shares of the present Lone Star Gas Corp. stock and the par value of the new stock will be $20 per share. The new company will maintain a stock transfer office in Dallas.

Lone Star Gas Corp. also owns a 30% interest in the Northern Natural Gas Co. which transports gas from the Texas Panhandle and other fields to Minneapolis and St. Paul, Minn., and certain towns en route. The Lone Star Gas Corp. will divest itself of this stock, which it will offer to sell at $19 per share to its own stockholders in the ratio of one share of Northern Natural Gas Co. stock to each 18 shares of its stock.

When these plans have been approved by government authorities and the stockholders of the corporation, Lone Star Gas Co. will be engaged primarily in the purchase, transmission, and distribution of natural gas in Texas and Oklahoma but it no longer will engage in the drilling of wells or production of natural gas. This phase of the business will be conducted by the Lone Star Gasoline Co. which will produce natural gas and natural gasoline and from which Lone Star Gas Co. will obtain its major supplies of natural gas for distribution in Texas and Oklahoma.

Some changes in officers and directors will be necessary under the simplified corporate structure, but Mr. Hulcy stated there would be little change at present in the operations.

Lone Star Gas Co., which is the pipe line part of the business, selling gas wholesale to the local distribution companies, was organized in 1909 and built the first long distance pipe line in Texas, from the Petrolia field in Clay county, near the Oklahoma border, to Fort Worth, a distance of 95 miles, and then to Dallas. Charter for the company was secured by the late L. B. Denning, Sr., who for many years was president of the system.

Early in 1926 Lone Star Gas Corp. was formed, and the stocks of various distribution companies were acquired from time to time in order to create an integrated natural gas service with a single responsibility from gas wells to the customers' burners. The system has developed until it has more than 60 gas fields, 4800 miles of interconnected pipe line system, and 4700 employees.

■ ■

P. G. & E. Allowed to Exercise Bakersfield Gas Franchise

The Pacific Gas & Electric Co., San Francisco, Calif., was granted a certificate to exercise its gas franchise in Bakersfield by the California Railroad Commission, subject to the condition "that no claim of value for such franchise or the authority herein granted in excess of the actual cost thereof shall ever be made by grantee, its successors or assigns, before this commission or before any court or other public body."

Johns-Manville

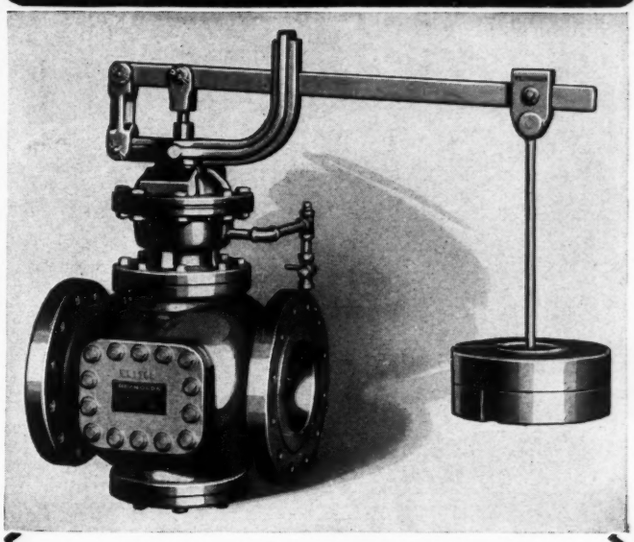
TRANSITE FLUE PIPE

AN ASBESTOS PRODUCT

For venting gas-burning appliances

REYNOLDS

HIGH PRESSURE REGULATOR *Gives Wide* ★ DELIVERY RANGE ★



REYNOLDS New High Pressure Line Regulators, (known as K. Series), without auxiliary bowl, features a wider range of delivery pressure control (2 lbs. to 100 lbs.), by use of four interchangeable diaphragm cases. It is manufactured in 2" to 16" sizes with cast iron, cast steel or bronze body, and a swivel head that simplifies installation in different shaped spaces. The valves in this unit can be replaced while the regulator is in the pipe line. Also, this regulator is available in pilot operated or pilot loaded construction with a choice of composition or metal seats. The K. T. *Series* with internal toggle levers can also be furnished.

In addition, Reynolds build High Pressure Line Regulators with auxiliary bowl, when complete lock up is required; any pounds to pounds regulator can be furnished with auxiliary controls.

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Gas Control Since 1892

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For war-time emergency-breaks in pipe lines, this Doublex Simplex Split Sleeve will enable you to make quick, economical, effective repairs. You should have a supply of several of each different size that you might need. Thousands in use, some for 13 years. Order now from shipping point nearest you as follows: Birmingham, Dallas, Kansas City, Los Angeles, Minneapolis, San Francisco, Pittsburgh.

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looking after every detail of your visit - attending to your needs as quickly, efficiently and unobtrusively as possible. service and hospitality are the watchwords at the metropole. popular priced dining room. rates from $1.50; with bath from $2.50. modern garage adjacent.

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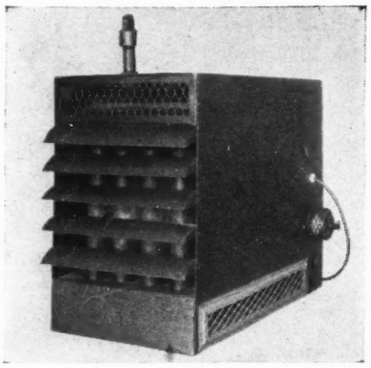
PRODUCTS

Unit Heater

John Zink Burner Co., 4401 So. Peoria, Tulsa, Okla.

Model: A new gas fired unit heater.

Application: For heating small or large spaces in industrial and commercial buildings. Can be arranged to meet almost any heating conditions, such as unusual exposures, hard-to-heat corners, open doorways, etc.



Description: Requires little wall or head room and can be suspended from roof trusses, completely out of the way. Piping and control equipment is simple and easy to install, and readily accessible, states the manufacturer. The casing is made of heavy gauge sheet metal and finished in micro-grained, baked wrinkle enamel in seal brown. Positive circulation is provided by quiet operating high speed fan. Forced circulation makes possible a very high heat transfer rate.

■ ■

Cylinder Valve

The Bastian-Blessing Co., 4203 Peterson Ave., Chicago, Ill.

Model: RegO Cylinder Valve for Internal Combustion Engines, No. 2918.

Application: The shut-off and excess flow check valve prevents excessive discharge of fuel atmosphere in the event of a pipe, tubing or connection failure.

Description: The valve is provided with an SAE flare outlet connection, making it suitable for use on internal combustion engines. It functions as a shut-off valve, and is also provided with an excess flow check valve as an integral part of the inlet connection.

■ ■

First Aid Kit

E. D. Bullard Co., 275 Eighth St., San Francisco, Calif.

Model: The Bullard Weatherproof First Aid Kit.

Application: A first aid kit which mounts to the wall or post in such a way that when the lid is open it acts as a shelf for the treatments being used.

Description: A completely weatherproof first aid kit which is available with mounting bracket that permits the kit to be removed instantly and carried to the injured when necessary. Contents are protected from the weather by a special "weather-strip" rubber tube that also acts as a spring that opens the lid when the fastener is released. Contents are easily removed whether the kit is laying flat or wall mounted because the sides are lower than the individual packets of treatments, which furnishes plenty of finger room. Inside the lid of each kit is furnished an "Instant Guide to First Aid" which gives the user application instructions and injury diagnosis symptoms. A folder, "A Unit First Aid Plan," is also avialable.

■ ■

Heating Control

L. J. Mueller Furnace Co., 2005 West Oklahoma Ave., Milwaukee, Wis.

Model: "Season-stat" Automatic Heating Control: "Cold 70."

Application: For gas, oil or coal-fired automatic heating equipment.

Description: Keeps the heating plant in step with the weather by slowing it down in mild weather and stepping it up in colder weather. The manufacturer states that the "Season-stat" provides the home owner with the same control over the operation of his heating system as he now has over his radio —he can "dial" his comfort with the same effortless ease with which he dials his radio and also that the control, by controlling the heat produced — smaller amounts in colder weather.

■ ■

1942 Servel Electrolux

Servel, Inc., Evansville, Ind.

Model: 1942 Model Servel Electrolux.

Description: The manufacturer states that the 1942 Servel Electrolux refrigerators feature an attractive, simplified exterior design, and retain all the modern, improved features inaugurated last year to meet the food storage problems of the modern housewife. Maximum flexibility of storage space, increased ice cube capacity, faster freezing of ice cubes and more easily removed ice cube trays, are among the convenience features retained in the new line. Other outstanding features retained include: tilt shelves next to the freezing unit, providing extra storage space for small containers, and, when tilted back,

extra storage space for unusually tall bottles; the three-position, and the two-position sliding shelves. Also retained are the "dew-drop" vegetable fresheners, controlled humidity for meats, and interchangeable porcelain storage trays.

Catalogs

• The B. F. Goodrich Co., Akron, Ohio, has issued a booklet which provides new data on obtaining maximum service from truck tires. Truck operators may obtain this "Operators' Handbook" free upon request. A 15-page section deals with factors governing truck tire service. Charts and tables are presented which show the effect of over- and under-inflation, mis-matching of dual tires, causes of uneven tread wear, and the effect of overloads and excessive speeds in generating heat. Twenty rules summarize factors which enable truck operators to obtain maximum service life from their tires.

• Cambridge Instrument Co., Inc., 3732 Grand Central Terminal, New York, N. Y., has issued a List (CEC) which describes industrial models of analyzers, indicators, and recorders that measure with laboratory accuracy. Recording gas analyzers, together with pH and other equipment for making precise measurements that effect savings of time, material and labor in production, are featured in the folder. It also invites inquiries on instrument problems. A copy will be sent upon request.

• The Mine Safety Appliances Co., Braddock, Thomas and Meade Streets, Pittsburgh, Pa., has issued a bulletin describing the M. S. A. Continuous Carbon Monoxide Recorder. A complete description of the Recorder's principle of operation and construction details, as well as a list of its installations, is contained in the bulletin (No. DB-1), copies of which may be secured by addressing the company.

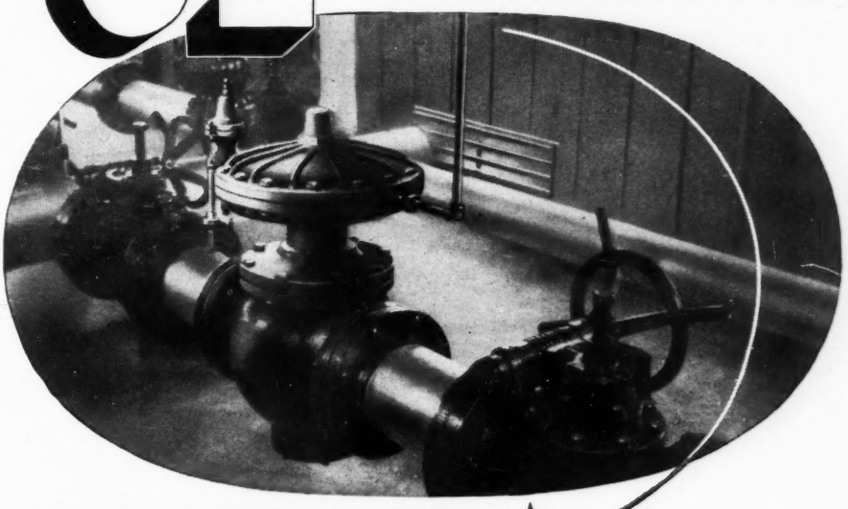
• Pomona Pump Co., 206 E. Commercial St., Pomona, Calif., has issued a new industrial catalog which gives practical information concerning pump adaptation for a wide range of duties under varying conditions. Illustrated case histories of varied applications are presented and also many drawings for laying in this type of pump. A free copy may be obtained by addressing the company.

• R-S Products Corp., 4530 Germantown Ave., Philadelphia, Pa., has issued Bulletin No. 11-C (4 pages), titled "R-S Standard Covers for Ball and Roller Bearings" which describes flat, medium and deep covers in two types of fastening flange . . . lug and round. It contains detailed drawings, sizes, styles and easy method of ordering.

• Caterpillar Tractor Co., Peoria, Ill., has issued a new 12-page booklet titled "On the Pipeline Front." The booklet tells the story of how the men and machines composing this industry are contributing greatly to the progress of commercial and domestic life all over the world. A free copy of the bulletin may be secured by writing for Form 7218.

• Porcelok Co., Division of Davidson Enamel Co., Clyde, Ohio, has issued a folder which describes Porcelok porcelain enameled corrugated roofing and siding. Typical Porcelok flashings are shown diagrammatically and engineering and specification data are presented in tabular form.

C-F *Pilot Loaded* REGULATORS



ON GUARD *at the critical points*

C-F Pilot Loaded Regulators insure accurate control of pressures where uninterrupted service must be maintained for round-the-clock production. Perfect-circle pounds-to-pounds regulation of delivery pressures from 1 to 200 lbs. Suitable for transmission line, town border, or industrial installations. No bleeds to atmosphere. Simplified design, with one adjustment only, easy to install—no factory man needed. Working parts entirely enclosed, yet readily accessible; rugged construction, nothing intricate to wear or to require expert attention. Sizes 1" to 2½" screwed, 2" to 10" flanged. C-F Regulators meet all pressure-control needs of industry. Submit your requirements for a specific recommendation.

THE CHAPLIN-FULTON MFG. CO.

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Reclassification and Cost Deemed Essential by FPC

THE Federal Power Commission has announced its determination that "reclassification and original cost studies are an essential aid to prosecution of the war effort in that they provide a sound basis for the most effective control of the prices of utility services entering into practically every important essential war activity as well as into the general cost of living. The availability of such regulation as a means of warding off the dangers of inflation in this field apparently led the Congress specifically to exempt the control of public utility prices from the provisions of the Emergency Price Control Act of 1942."

The statement was contained in an order denying an application by Minnesota Power & Light Co. asking that the Commission rescind a show-cause order dated February 3, 1942, in which the utility was directed to show cause why it should not adjust its accounts in conformity with the recommendations of the Commission's staff, why it should not dispose of, or submit plans for the disposal of, amounts aggregating $31,506,414.78 in accordance with the requirements of the Commission's Uniform System of Accounts, and why it should not submit a proper reclassification of amounts totaling $44,560,473.07. In a separate order the Commission extended to April 6, 1942, the date for reply to the show-cause order of February 3.

■ ■

Commercial, Domestic Rates Reduced in New Orleans, La.

COMMERCIAL and domestic gas rates in New Orleans, La., have been reduced by a compromise effected between the New Orleans City Commission Council and New Orleans Public Service, Inc., local gas utility. The new rates were suggested by Federal Judge B. Foster, following a debate by the city council over an ordinance limiting the return on the rate base investment of utility holdings to 6% instead of the former 7½%.

On January 14 a tentative ordinance cutting the gas rate from 90¢ a thousand for domestic consumers to 54¢ a thousand without a 25¢ meter charge formerly applied, was adopted.

A new ordinance was adopted March 3 which wiped out all former steps, reducing the gas rate to a degree accepted by New Orleans Public Service, which has announced that it is willing to put the Foster compromise rate into immediate effect.

The former rate was 90¢ with a 25¢ meter charge. Under the rates suggested by Judge Foster, these were cut to 90¢ per thousand for the first 1000 ft. to domestic consumers, 70¢ per thousand for the next 5300 cu. ft., 60¢ per thousand for the next 14,000 cu. ft., and 50¢ per thousand for all gas used over 20,000 cu. ft. The meter charge has been lifted.

■ ■

Anaconda Co. Combines War Effort With Aluminum Co.

In cooperation with the national drive for war production, the Aluminum Co. of America, and the Anaconda Wire & Cable Co. have combined forces to meet the increasing demand for war supplies.

Following the declaration of war upon the Axis, the aluminum company was faced with the immediate diversion of the major part of its aluminum production to the manufacture of planes. This resulted in some idle cabling machinery designed to manufacture wire and cable. Simultaneously, the Anaconda company found its facilities pushed to supply the war demand for electrical wires and cabling machinery. The bottle-neck was relieved by an agreement between Harold V. Engh, executive vice president of the Anaconda concern, and R. R. Stevenson, general superintendent of the Aluminum company. Anaconda now receives cabling machinery from the Aluminum Co. of America for a figure below its original cost.

■ ■

Iowa-Illinois Co. Acquires Control of Six Utilities

The Iowa-Illinois Gas & Electric Co., Rock Island, Ill., has acquired all of the assets and liabilities of the Fort Dodge Gas & Electric Co., Fort Dodge, Iowa; Cedar Rapids Gas Co., Cedar Rapids, Iowa; Iowa City Gas & Electric Co., Iowa City, Iowa; Ottumwa Gas Co., Ottumwa, Iowa; Peoples Light Co., Davenport, Iowa; and Peoples Power Co., Moline, Ill., according to an announcement by John V. McKinney, president of the company.

The predecessor companies are in the process of liquidation and the former independent companies are now operated as districts of the Iowa-Illinois Gas & Electric Co.

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Appraisal on Utility Property Life Completed

THE comprehensive "Appraisal of Methods for Estimating Service Lives of Utility Properties," a study undertaken several months ago by the Depreciation Committees of the American Gas Association and the Edison Electric Institute, has been completed and submitted to the Committee on Depreciation of the National Association of Railroad and Utilities Commissioners.

The study is primarily a factual report, and contains the following six sections: Summary; Actuarial Methods of Estimating Service Life; Turnover Methods of Estimating Service Life; Forecast Methods of Estimating Service Life; Technique in Handling Data; General Appraisal of Methods.

The membership of the AGA and EEI Depreciations Committees includes accountants and engineers, but this particular study, from its nature, represents primarily the work of the engineering members. However, the accountants were in close conference with the engineers during the development of this study, and are in general agreement with their findings.

The Appraisal contains 264 pages, including 30 charts and numerous tables.

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Immersion Heater Research Under Way at Laboratories

Recognizing the need for basic data on immersion tube heating for commercial and industrial uses, the Committee on Industrial Gas Research, of which J. W. Batten, vice president and general manager, Michigan Consolidated Gas Co., Detroit, is chairman, has initiated a fundamental research project for this purpose. This assignment has been made to the American Gas Association Testing Laboratories.

Designated as project No. 47, "Research in Gas Immersion Heater Design and Operation," laboratory work was started late in January. The experimental work will be divided into three parts, using atmospheric, forced draft, and induced draft immersion burners. Examination and testing of these representatives types will precede recording of data and determination of effect of changes in important design variables on their performance.

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American Meter Co. Granted Certificate by Society

American Meter Co., New York, N. Y., has been granted a certificate by the Equitable Life Assurance Society of the United States commemorating the 25th anniversary of the group life insurance plan for the employees of that company.

Since its adoption in 1917, benefits of $464,918 have been paid to 294 employees and their families. Over 35% of the deceased employees left no other life insurance to their dependents.

In addition, benefits totaling $82,833 have been paid to employees under the group accident and health, group accidental death and dismemberment, group hospital expense and surgical benefits plans.

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Design—Construction—Reports
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